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NEWSPAPER

COMPUTERWORLD

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Reagan May Appoint IBMers

Drake Lundell Jr.
CW Staff

WASHINGTON, D.C. — While Jimmy Carter and his host of advisers with IBM connections were resoundly thrown out of office last week, others with IBM ties are expected to come into office with the new Ronald Reagan administration next January.

Four members of the IBM board of directors are active in Republican party circles and all may end up with some jobs in the incoming administration. In addition, the Bechtel Group of companies — an apparent hotbed of Reagan supporters — is also represented on the IBM board.

During the Carter administration, personnel with IBM ties have held at one time or another the posts of Secretary of State, Secretary of Defense, Secretary of Commerce, Secretary of Housing and Urban Development and Secretary of Health, Education and Welfare [CW, Jan. 31, 1977].

The IBM influence on both sides of the political fence follows a long corporate tradition — a tradition that also called for activism in political affairs by the highest corporate officials.

Among present IBM board members who may be enticed to Washington for the new administration are William W. Scranton, former ambassador to the United Nations under Nixon and former governor of Pennsylvania. Pennsylvania went early and dramatically into the Reagan column last week.

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System Puts NBC First In Calling Reagan Win

NEW YORK — John Chancellor predicted Ronald Reagan would be the next president of the United States at 8:15 p.m. EST last Tuesday — hours before the polls had even closed in some parts of the country and with only 1% of the vote actually counted.

How?

Part of it was guts, but the rest was confidence — confidence in the results of exit polls and the system used to process them, refined over the last four years by NBC's Elections Unit according to an NBC source.

Although the network was criticized by its two rivals, NBC spokesman Ron Najman defended NBC's decision to call the election early. "Exit polling is a very realistic way of assessing the mood of the electorate," he said. "However, the only real way is based on the actual hard data fed from the key precincts, and our protection was based on hard data."

Two Data Streams

NBC uses a system that processes two basic streams of data — actual election returns from the News Election System (NES) here and voter comments from a team of precinct pollsters nationwide. The NES system was set up to serve all the wire services as well as the three national television networks.

The NBC pollsters simply ask voters for whom they voted as they leave the polls. At appointed times throughout the day pollsters call in their totals to data entry personnel at a bank of computer terminals here. The data is input and processed on the system.

When the information from the exit polls started matching actual vote counts coming in from the NES, NBC decided to call it, another spokesman said.

Meanwhile, news anchormen at the other two networks decided to play it more cautiously and wait for actual vote counts. President Carter actually conceded his defeat before CBS had called Reagan the winner.

NBC was the object of severe criticism last week from those news outlets it "beat" in calling the election on two counts: first, the polls had not even closed in some parts of the country; second, they questioned the accuracy of exit interviews.

Court Action Likely

Key Inquiry II Provisions Uncertain

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — Although the Federal Communications Commission (FCC) has reconsidered its "final" decision on the Second Computer Inquiry and reaffirmed many of the original provisions, a good deal of uncertainty remains.

The ultimate decision on several key provisions is likely to be made by a court rather than the commission.

Some three dozen petitions for review of the final decision, as initially issued last spring [CW, May 12], are now pending before the U.S. Court of Appeals for the District of Columbia, and more are likely to be filed in the wake of last month's actions.

The FCC, in its latest pronouncement on computer and communications:

- Reaffirmed the separation of all communication services into two basic categories — basic and enhanced. The former, including dial-up and most private-line transmission services, would continue to be offered by AT&T operating companies under tariff. The latter, encompassing services that employ computer processing to act on the format, content, code or protocol of the subscriber's transmitted information, would be offered on a deregulated basis through a separate AT&T subsidiary.
- Excluded General Telephone and Electronics Corp. from the above requirement.
- Asserted the commission's authority to regulate enhanced services, but said regulation would not be imposed unless it was needed.
- Deregulated some terminal equipment beginning March 1, 1982, and announced that the question of deregulating the rest would be the subject of a further inquiry. The equipment to be deregulated includes all devices installed after March 1, 1982, plus all devices — regardless of installation data — subject to interstate tariffs. The inquiry will involve only terminal equipment tariffed by the states.

Several provisions of last month's

(Continued on Page 8)

Univac AVP Runs Both OS 1100, VS/9

By Tom Henkel
CW Staff

BLUE BELL, Pa. — In an attempt to lure its Series 90 users to the larger 1100 line of mainframes, Univac has announced the 1100/60 Attached Virtual Processor (AVP), which will run OS 1100 and VS/9 software concurrently. The AVP will give 90/60, 90/70 and 90/80 users a boost in processing power along with 524K to 1M words of main memory and 32K-byte cache buffer storage without having to go through a software conversion. Additionally, Univac users can continue to run VS/9 programs on the 1100/60 AVP, even if they migrate out of the Series 90 line into the 1100 series, a spokesman said.

The key to the AVP is a software package called the Attached Processor Control Software (APCS), which allows the 1100/60 attached processor to run VS/9 software and Series 90 disk subsystems. In addition, disks like Univac's 8470 also can be used, allowing the VS/9 user to take advantage of more technologically advanced drives, the vendor said.

In a direct attachment, Series 90 disk subsystems are connected to the 1100/60 via the mainframe's block multiplexer channel. In a logical attachment, disks are connected via standard Series 1100 software. And in a local environment, the disks are attached through an optional block multiplexer channel.

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Product Spotlight

Range of Minis Profiled for DDP Use

By Tim Scannell
CW Staff

If there existed a Hall of Fame for Favorite Phrases and Catchy Buzzwords, distributed data processing (DDP) would probably occupy a key position. However, even though the term probably has been bounced off more conference room walls and eaten up more paper and ink than any other industry topic, few people actually put the concept to practice.

Today, "anybody who has a remote terminal is calling their system a distributed processing system," Dr. Jerry Held, director of software research and development at Tandem Computers, Inc., said. "Some processing may be going on remotely, but really the vast majority of it is centralized."

Held, who describes DDP as "a commonly misused word," explained that true distributed processing not only involves decentralizing the main processor, but distributing the data base and data management work throughout the field. There is no central cache of information, but a scattered body of knowledge that can be accessed equally by any one of several remote stations.

The major stumbling block to "true DDP" is that most major computer systems, including those offering distributed terminals, were designed before the era of distributed processing, Held continued. As a result, people using these systems "are backing into DDP, and it's going to take years to retrofit and get into a really true distributed environment."

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CDC Offers 3830-Type Controller

MINNEAPOLIS — Control Data Corp. has announced a plug-compatible version of IBM's 3830 disk controller that reportedly offers twice the performance while requiring one-third the space and one-fifth the power as the IBM model.

The CDC 38304 controller offers two independent path, or storage, directors that transfer data file positioning commands between the processor channels and the disk storage units.

The CDC controller can be attached to IBM's 4300, 30 series and 370 mainframes, as well as plug-compatible mainframes, CDC said.

The 38304 can be attached to the block multiplexer channel, and each storage director can access up to four processor channels with the addition of optional two-channel or four-channel switches. In a four-channel configuration, an individual storage director can control up to four strings of disk drives, with a maximum of 32 actuators. That offers a total capacity per storage director of between 5G and 20G bytes of data, CDC explained.

The CDC controller can accept IBM-type 3350, 3333 and 3330 disk drives, the vendor added. The controllers can also be used in a multiple host environment.

The standard string switch on the CDC unit and CDC's dual access features reportedly allow up to eight processors to have two separate paths to each disk volume of data.

The controller costs $58,421, or $1,205 a month on a three-year lease. CDC also charges a $176 monthly maintenance fee. First shipments are scheduled for the fourth quarter of 1980, according to CDC.

In addition to announcing the disk controller, T.G. Kamp, CDC's president of peripheral products, announced the firm will bring out a plug-compatible version of IBM's 3880 controller and a competitor to IBM's newly announced 3380 disk drives.

The firm will probably announce the 3880-compatible controllers the first quarter of 1981, Kamp said.

Firms Suing Iran Awaiting U.S. Plan for Frozen Assets

By Marcia Blumenthal
CW Staff

DP firms with lawsuits pending against the nation of Iran were awaiting word from the State Department last week about what action the government will take to unfreeze the estimated $8 billion in Iranian assets — a condition demanded by Iran for the release of the 52 American hostages held in that country since last November.

Although most firms contacted last week declined to comment on the matter, Charles P. Lecht, president of Advanced Computer Techniques Corp. (ACT) said the assets should not be released.

His firm filed a $2 million lawsuit against Iran six months ago for nonpayment of services performed for the Persian Air Force. ACT had 50 DP personnel working in Iran at any given time since 1976, he said. Ironically, the government was just on the verge of paying its bill when the revolution began.

A State Department spokeswoman said the government was attempting to respond to Iran's demands as quickly as possible.

Releasing the assets is one thing, but complying with Iran's demand that the U.S. government cancel all private claims against the Iranian government is a dilemma, she said.

Court cases have been filed against those assets. Electronic Data Systems Corp. (EDS) already received a $19 million judgment against Iran from a federal court in Dallas last May [CW, May 12].

At last report, EDS was attempting to seek the release of the money award. However, a lawyer involved in that case declined to comment on the present status of the matter.

Government officials have suggested that if Iran agrees to set aside a portion of those frozen assets for payment of U.S. claims, the remainder of the monies could be released within a few weeks.

A Treasury Department spokesman noted there is a precedent for this action. One recent example is with China. U.S. parties had claims against China dating back to the 1949 revolution in that country. When China finally agreed to settle a certain portion of those claims, the U.S. unblocked the assets.

Besides EDS and ACT, Harris Corp. filed a lawsuit for $9.3 million against the Iranian government, charging it breached a contract to manage the installation of sophisticated electronic intelligence gathering and DP systems [CW, Jan. 28].

Computer Science Corp. filed a breach of contract suit in the U.S. District Court in Los Angeles for $8.9 million in February. That firm has already written off $1.9 million in losses for its Iranian operations.

Although Control Data Corp. said it was still receiving payment from Iran for installed hardware, a company spokesman was unable to determine at press time whether CDC had made any legal claims against Iran.

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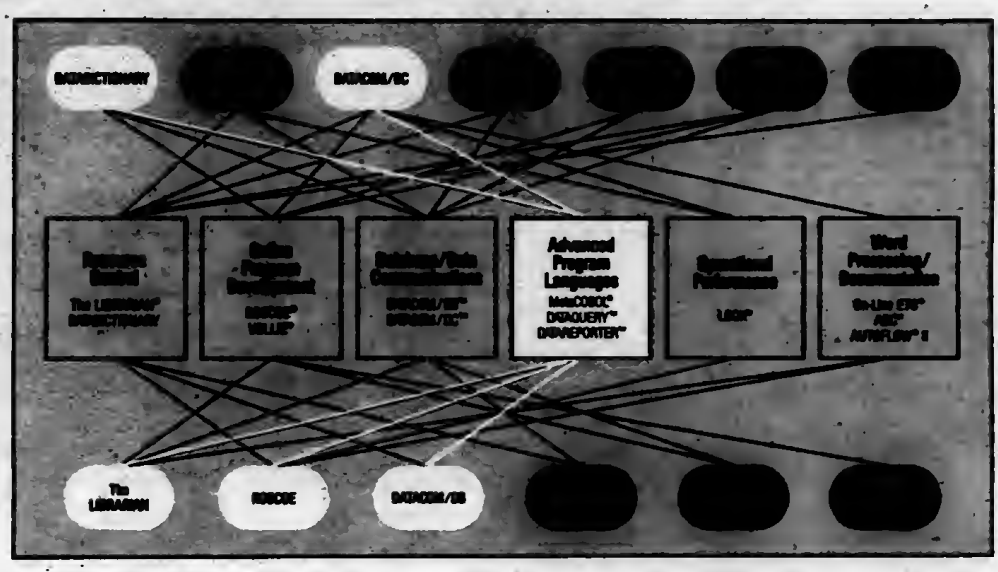

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London Hosts European Computer Exhibition

By Tim Scannell
CW Staff

LONDON — Despite freezing temperatures, overcast skies and an occasional snowflake, thousands of people showed up here last week at the Compec '80 computer show to see Europe's latest in computers, peripherals and systems.

The Compec '80 show is basically an exhibition aimed at the European business community and therefore showcased a lot of minicomputer-based business systems. A number of 32-bit machines were on display — from such companies as Digital Equipment Co. Ltd.; Perkin-Elmer Data Systems Ltd. and Systems Engineering Laboratories. The vendors molded their pitch to meet the needs of the small-to-medium business user rather than the large end-user or scientific shop.

Expected Attendees

More than 34,000 people were expected to register before the show's end. The show took place at the sprawling grand hall convention complex, a city-block-long affair that is located in Olympia, a West-End section of London. An annual event, the exhibition is sponsored by *Computer Weekly* and *Data Processing*, two British publications.

While the exhibition was similar to

CW at Compec '80

the National Computer Conference (NCC) with its tightly spaced booths and circus-like atmosphere, Compec did not spotlight any equipment that had not been announced in the U.S. In fact, most of the computers and peripherals on display here last week were introduced earlier at last summer's NCC or last month's Info '80 show in New York. However, most of the equipment on the show floor was new to European eyes.

Those American-based companies that did use the show to feature previously U.S.-introduced equipment to the UK included:

Making its first appearance at Compec, IBM demonstrated its 3101 display terminal and associated 3102 serial matrix thermal printer and its 3279 color display station. Systems Engineering Laboratories' British cousin showed its model 32/27 minicomputer, introduced at NCC. Computer Automation ran its Syfa line of computers through their paces for interested show attendees.

Prime Computer Ltd., occupying a large booth on the show floor, demonstrated both its integrated business system and office automation system, which generated a lot of attention, particularly with this continent's interest in viewdata, Prestel and other electronic information systems.

A number of companies at last week's show unveiled new products that are tentatively scheduled to be introduced in the U.S. at a later date. For instance, Sharp Corp., based in Osaka, Japan, showcased its PC-3200 personal computer system which has a 12-in. CRT, 64K bytes of memory, two floppy disk drives and a dot matrix printer. While the system is formally labeled a "personal computer" it is geared more towards the personal needs of the small business person rather than the games and bank-account-balancing functions normally associated with personal computing in the U.S. The Sharp computer is scheduled to be mass-shipped this February and will be marketed in the U.S., although a company spokesman refused to specify exactly when the machine would land on U.S. shores.

Modular Technology, a division of General Robots Ltd., introduced a laser-based data and voice communications system, called Interlaser, which can reportedly be used as a telephone or a data terminal using standard data and telephone interfaces. Housed in a small aluminum box, the laser device operates on a line-of-sight basis and transmits up to 50K bit/sec asynchronous or up to 19.2K bit/sec synchronous.

The unit's high-speed synchronous transmission rate is up to 5M bit/sec. The laser transmitter, demonstrated at the booth by setting up a communications link from one end to the other, can be linked to any computer using an RS-232C interface, a spokesman claimed.

Modular Technology is currently working out distributorship plans with an American company and will soon start marketing the device directly to U.S. end users. Presently, Interlaser can be ordered from the first based here in London.

Other American-based companies joining the more then 350 exhibitors here included Control Data Ltd., Floating-Point Systems, Pertec International and Plessey Peripheral Systems Ltd.

Also, for the first time at Compec, Canada was represented by a cross section of Canadian computer and peripherals manufacturers.

Change the Name, The Game's the Same

By Tim Scannell
CW Staff

LONDON — The location's very different, but the selling strategies are the same. Whether it's at the U.S.' National Computer Conference or here at Compec '80, vendors seem to use more than enough robots, balloons and plastic bag giveaways to attract a potential buyer's attention.

For instance, BASF's Computer Division recruited a brightly painted high-powered British sports car to attract any attendees that might have an automotive as well as a computer interest. If that wasn't sufficient, the company also supplied pictures of the sports car to the press, featuring a blonde model in various stages of undress.

Not to be outdone, Modular Technology had an assortment of roller-skating models that sported bright red hard hats and red clipboards. As Compec attendees examined the firm's data communication wares, the models skated around on a wooden floor accompanied by the beat of piped-in disco music.

Personal Computers Ltd. enhanced its display by providing a ribbon-clad model that hinted of the Miss World competition, due to take place in London the week following the Compec exhibition. Dressed in bright purple satin, the model passed out the firm's literature to the flowing crowds.

For the weary conventioneer, there was even a pub-like bar that featured pints of ale and a place to rehash any discoveries on the show floor.

Qume Opens UK Subsidiary

By Tim Scannell
CW Staff

LONDON — As the Compec '80 exhibition got under way, Qume Corp. announced the establishment of a subsidiary here that will include a 6,000 sq ft factory to be based in Reading, Berkshire.

The Qume subsidiary will reportedly provide a single source for customers and users here of the company's products as well as technical support and service facilities. Also, an official distribution channel for end-user and dealer sales has been established under the Qume name, comprised of the following companies: Access Data Communications Ltd., Daisy Terminals Ltd., Facit, ISG Data Sales Ltd., and Rohan Computers Ltd.

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Computer Crime Meet to Feature DP Industry Security Experts

WASHINGTON, D.C. — Top DP security specialists from private industry and government will be featured at the upcoming "Computer Crime Info — Computer Security and Fraud Control" conference scheduled here for Dec. 1-3.

The conference, aimed primarily at top executives, will examine in depth the primary management issues and available solutions for government and business in addressing computer security issues and combating computer crime, according to The Information Exchange, the event's sponsor.

The Information Exchange, a non-profit educational organization for the business and management communities, has enlisted as conference chairman Robert P. Campbell, president of Advanced Information Management, Inc., Woodbridge, Va.

Speakers at the three-day conference will include James H. Burrows, director of the National Bureau of Standards Institute for Computer Sciences and Technology; Dr. Carl Hammer, Univac computer sciences director; Joseph Henahan, chief of the Federal Bureau of Investigation's white-collar crime section; Donald E. Doll, IBM asset protection manager; Robert A. Graytock, chief of ADP and telecommunications security policy of the Justice Department; and computer security specialist Robert V. Jacobson of International Security Technology, Inc., New York.

Conference organizers are expecting approximately 100 people to attend the conference, set for the Crystal City Marriott Hotel here. Registration information is available from Gil Merritt, The Information Exchange, Suite 400, 1730 N. Lynn St., Arlington, Va. 22209.

First On-Line Maneuver

AT&T's Claim to 'Basic' Service Disputed

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T's attempt to make its Custom Calling II service "basic" rather than "enhanced" has generated spirited opposition from competitors. They dispute the phone company's claim that Custom Calling II is like basic services already being offered directly by telephone-operating companies.

The argument is significant because it appears to represent the first step in a major Bell effort to win a commanding position in the on-line information services business.

Last April, in its "final" Second Computer Inquiry Decision, the Federal Communications Commission (FCC) explicitly listed Custom Calling II as an enhanced service that would have to be offered through a separate Bell subsidiary, rather than a basic offering that could be provided by an AT&T operating company. The distinction is considered important by the phone company's competitors.

Early last month, however, AT&T Vice-President James Billingsley asked the commission to reclassify Custom Calling II as a basic service. He pointed out that its value is derived largely from interconnection with the dial-up telephone network and that it closely resembles services already being provided directly by telephone operating companies.

The opposition surfaced a short time later — from IBM, the Association of Data Processing Service Organizations, Inc. (Adapso), the computer and Business Equipment Manufacturers Association (Cbema) and the Associated Telephone Answering Exchanges (ATAE).

Custom Calling II consists essentially of two options, which AT&T refers to as "Call Answering" and "Advance Calling." The former allows a subscriber who is away from his phone, or who does not wish to receive calls, to have them stored in digitized form within the network on high-density disks. Later, by dialing specified codes, the subscriber can retrieve these messages.

Advance Calling allows the subscriber to store an outbound message within the network and have it delivered at a specified time.

According to Billingsley, Custom Calling II services are part of a family of offerings. The first generation of this family consists of Custom Calling I and Extended Call Answering, both already offered by AT&T operating companies. Custom Calling II services "complement" the earlier services, he added.

IBM argued that Custom Calling II stores voice messages within the network, while Custom Calling I does not. ATAE added that "Custom Calling II services are not products of the switched network, but are made feasible only by . . . attachment . . . of the [digital] voice storage system."

Univac AVP Targets 90V User

(Continued from Page 1)

Tape volumes written on Series 90 CPUs can be processed by the 1100/60 AVP without modification. In addition, all VS/9 spooling to printer, card reader and card punch devices are simulated through the APCS package using standard OS 1100 spooling facilities, Univac said.

The console interface to both VS/9 and APCS is through Univac's UTS 20 terminal. The unit also simulates operator panel controls via functions keys, the vendor said.

In addition to the attached processor, Univac announced additions to its OS 1100 software line that were designed to interface with VS/9 software. The software products are IMS 1100, a transaction processing system; Edit 1100, the Interactive Processing System 1100, a full-screen display text editor; Pads 1100, the Programmers Advanced Debugging System; and an industry-compatible RPG-II compiling system, according to Univac.

The attached processor package consists of a central processor with a logic bus structure and microcode control similar to the 90/80 family. Specially designed hardware and microcode allow execution of all VS/9 instructions except I/O. Those instructions are performed independently by the APCS package, Univac said.

The 1100/60 AVP costs from $440,684 for a 524K-word version to $701,598 for a 1,048K-word model. The 524K-word AVP leases for $8,427 a month and the 1,048K-word model leases for $13,352 a month. Maintenance on the low-end version costs $1,601 and maintenance on the 1,048K version costs $2,022 a month.

Optional support service on the AVP line costs between $550 and $750 a month, the vendor added.

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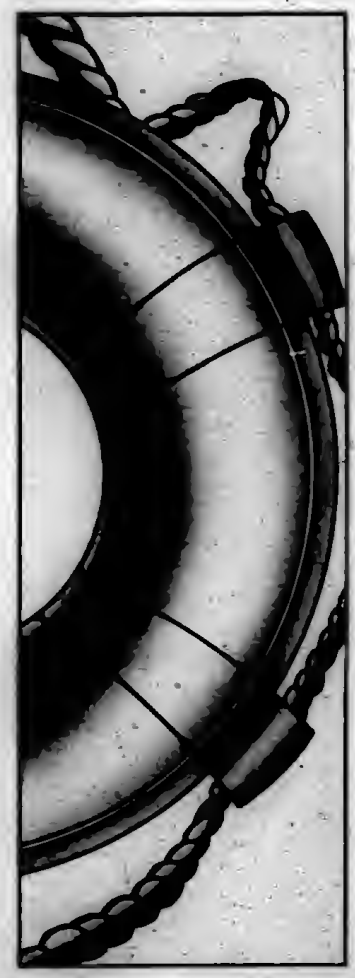

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Operating System, Hardware Integrated

User Spins Net out of Honeywell, Bunker Ramo

Special to CW

AMSTERDAM, Netherlands — Few users are willing to take the time and trouble to modify or create operating software to integrate hardware and software from two systems vendors whose systems were not designed to work together.

One company that did so, and successfully, is Nederlandsche Credietverzekering Maatschappij N.V. (NCM) here.

Established in 1925 by a group of banks, insurance companies and private investors, NCM provides credit insurance covering the normal risks associated with domestic and foreign trade, as well as insurance against political risks associated with foreign trade. This is provided under the terms of a reinsurance agreement it has with the Dutch government.

NCM's hybrid system combines CII Honeywell Bull Level 66 mainframes with Bunker Ramo Corp. minicomputers and CRT terminals, according to Rienk de Vries, the Dutch company's systems manager.

Uptime for the Bunker Ramo portion of the system is 99.5% and for the Honeywell Level 66 system, 99.8%, according to de Vries.

The hybrid system was made necessary because in the 1970s, when the firm's latest computer system was designed, not many mainframes with distributed processing capabilities were available in Europe.

Honeywell Bull was chosen on the basis of the performance of the Level 66 mainframe system in a combined environment of batch and on-line applications even though Honeywell did not have an on-line terminal system that would meet NCM's requirements.

Honeywell did help find a terminal system that could be integrated with the Level 66/10 mainframe, and Bunker Ramo's Bank Control System 90, with its Programmable Control Unit (PCU) minicomputer, was the system selected.

The Bunker Ramo System 90 was actually designed for use in on-line branch teller terminal networks for commercial banks, and included the minicomputer-controlled clustered terminal architecture that NCM was looking for. In addition, it came with a terminal controller operating system that both Honeywell and NCM believed had the potential to be adapted both to Honeywell's operating system and the more general, multifunction use required by NCM, according to de Vries.

When Bunker Ramo and its Dutch distributor, Vermon Kantoormachines B.V., offered to assist in making the required software modifications, the decision was made to go ahead with the detailed design and installation of the hybrid system.

Installation of both the Honeywell and Bunker Ramo hardware was completed by November 1976. The initial configuration was rather small: 192K words of memory — 1,152K 6-bit bytes — and 600M bytes of disk storage. The mainframe, a Honeywell Level 66/10P CPU, was connected to the Bunker Ramo System 90 PCUs through 9,600 bit/sec communication lines.

Host Added

In 1978, a second Honeywell/Bull 66/10P computer was added, bringing the configuration to 512K words of memory — 3,072K 6-bit bytes — and 1,400M bytes of on-line disk storage.

The two mainframes were connected in tandem to provide backup in the event of system failure. In addition, the number of Bunker Ramo terminal network systems linked to the central computers was increased to 15 with a total of 120 1,920-char. CRT units. All 15 systems are located at NCM's office in Amsterdam.

Each of the Bunker Ramo systems consists of one PCU with 48K bytes of memory, a floppy disk drive, eight 1,920-char. CRT terminals and two line printers.

Communications between the Honeywell system and the Bunker Ramo systems are managed by NCM's Racal-Milgo, Inc. network control center, which has the capability to monitor, switch and patch data communications lines between the host computers and the Bunker Ramo systems with their associated terminals.

The software driving the host systems is Honeywell's GCOS operating system with IDS as the data base manager, Transaction Driven System (TDS) as the data communications manager, and GRTS/DSE as the operating system for the front-end network processors.

The basic software conversion requirement of the hybrid system was a modification of the Bunker Ramo banking-oriented operating software into general-purpose software. This resulted in the development by NCM and Bunker Ramo's Dutch distributor of software called Mask Generation System (MGS), which was substituted for the Banktran bank terminal applications screen controller software that came with the system.

Because the MGS software is both modular in design and transparent to the host computer, the result has been a network independent of the host computer and the system's application software, according to de Vries.

MGS is based upon the facility provided in the basic Bunker Ramo System 90 software to keep all the application "masks," or screens, on the floppy disk. These masks consist of all the fixed text that, together with the variable data from the company's data base, must be displayed at the terminal in order to complete any transaction.

MGS Capabilities

MGS offers the following capabilities:

- The ability to build, change and delete masks at each terminal independently of the host computer.
- Checks on the data to be sent to the host can be controlled at the local site by defining data fields that are protected or unprotected, restricting data to be displayed by use of multilevel passwords, and by relational checks between data fields and each mask or screen. All of these error-checking functions can be performed independent of the host computer.
- Simple mask call-up either by name or mask number.
- Data entered at the remote terminals can, if desired, be stored off-line on the floppy disks.
- The system has an up-line dump capability for sending information directly from the remote floppy disks to the host computer in batches.
- Down-line system loading can be performed from the host systems either to the floppy disks or directly into the memory of the local PCUs. This capability is used to send the host-generated terminal operating system to the local PCUs at the beginning of each working day.
- The local PCU's floppy disk is also provided with a program that will permit the punching of data on paper tape for telex transmission to clients or other external locations.
- The MGS load generator has been designed to provide highly accurate measurements of on-line system performance. It measures actual network performance and records actual terminal response time.

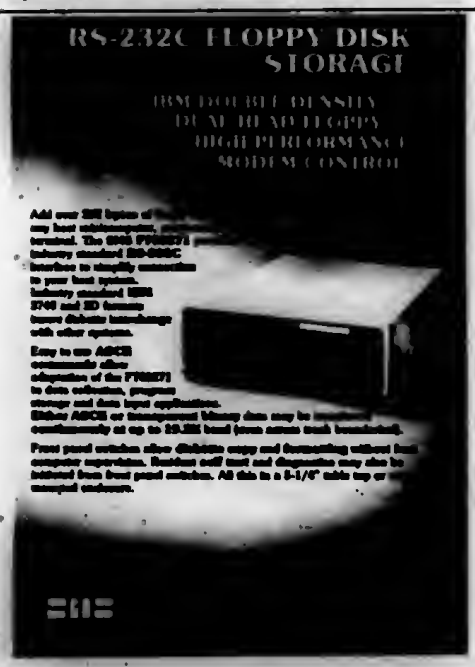
According to de Vries, both his company's credit limitation and credit information gathering and retrieval functions have been in full operation on the system for some time, and the policy and collection and claims housekeeping functions are expected to be fully integrated into the system by January 1982.

Host Upgrade

In the fourth quarter of 1980 a Honeywell Level 66 Distributed Processing System DPS 05 system is scheduled to replace one of the original Level 66/10s, with a second 66 DPS system scheduled for installation by the end of 1981, by which time the company expects its terminal network to have doubled in size.

One of the principle reasons for upgrading to the Honeywell DPS system is its capability to interconnect with the public packet-switching networks, based on the international X.25 data communications protocol, that are currently being developed throughout Europe.

Through the use of these public packet-switching networks NCM plans to install additional Bunker Ramo terminals and associated PCU terminal controllers at four or five locations in Holland to provide large insured client companies with direct access to its credit information data base.



'Harry, You Must Get Over This Notion That the Computers Are Out to Get You.'

Assembly Language Programs Blamed

IRS Gear Underuse Costs $100 Million/Year

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — While the Internal Revenue Service (IRS) plans a long-term, $280 million DP upgrade, its failure to take advantage of current processing capacity is costing the government as much as $100 million a year in uncollected revenues, according to a recent Congressional audit.

IRS officials were called before a House subcommittee last month to explain why they have not instituted the 100% document matching program mandated by Congress in 1976. Document matching is the process of comparing tax return information against wage data reported directly to IRS by employers and matching return information against various reports, such as interest data submitted by banks and dividends reported by corporations.

At the hearing, the General Accounting Office (GAO) said 79% of the returns for tax year 1978 entered the matching cycle. That consisted mainly of data supplied on computer-readable media. Only 22% of paper returns were processed through the IRS National Computer Center in West Virginia for the tax year.

The GAO estimated that if all returns, paper and computer-readable, were processed, the Treasury would take in more than $1 billion more in the 1980 tax year than it did through the 1978 document-matching effort.

After refunds to taxpayers, the net yield to the government would be approximately $590 million, compared to the current matching program yield of some $483 million, the GAO said. The agency estimated the full matching effort would cost only $125 million, compared to the present $85 million.

Funding Blocked

Rep. Benjamin Rosenthal (D-N.Y.) called the October hearing to ask the Treasury Department, the IRS parent agency, why it had blocked funding for IRS efforts to move to a full document matching program, which Rosenthal called "the IRS' first line of defense against tax evasion."

Rosenthal also charged the IRS is pursuing its eight-year, $280 million DP equipment upgrade while "much of its existing sytem lies idle."

The GAO, while agreeing the IRS can improve its computer operations through the upgrade, suggested in a report released after the hearing that the IRS "has the opportunity to greatly increase the productivity of some of its present computers and thereby reduce costs and facilitate conversion to new systems."

While it has made "considerable progress" toward the goal of 100% document matching, IRS has "sufficient computer capacity to process and match all the information returns not currently being used," the report said.

IRS efforts to reach that goal have been impeded by budgetary restraints imposed by the Treasury Department, according to GAO. The study further blamed "inefficient design of the information returns processing system and mismatches between job requirements and computer resources" for limiting IRS computer productivity.

Because planning is not complete for the upgrade, the GAO suggested the new system can be designed to facilitate a more streamlined returns processing arrangement.

By 1985, IRS plans to replace the Honeywell, Inc. 2050A and Control Data Corp. 3500 computers used at its 10 regional processing centers. Because 93% of application programs are in assembly language, the centers cannot easily shift work from the "heavily burdened" 3500s to the "underutilized" Honeywell systems, GAO noted in examining the current configuration.

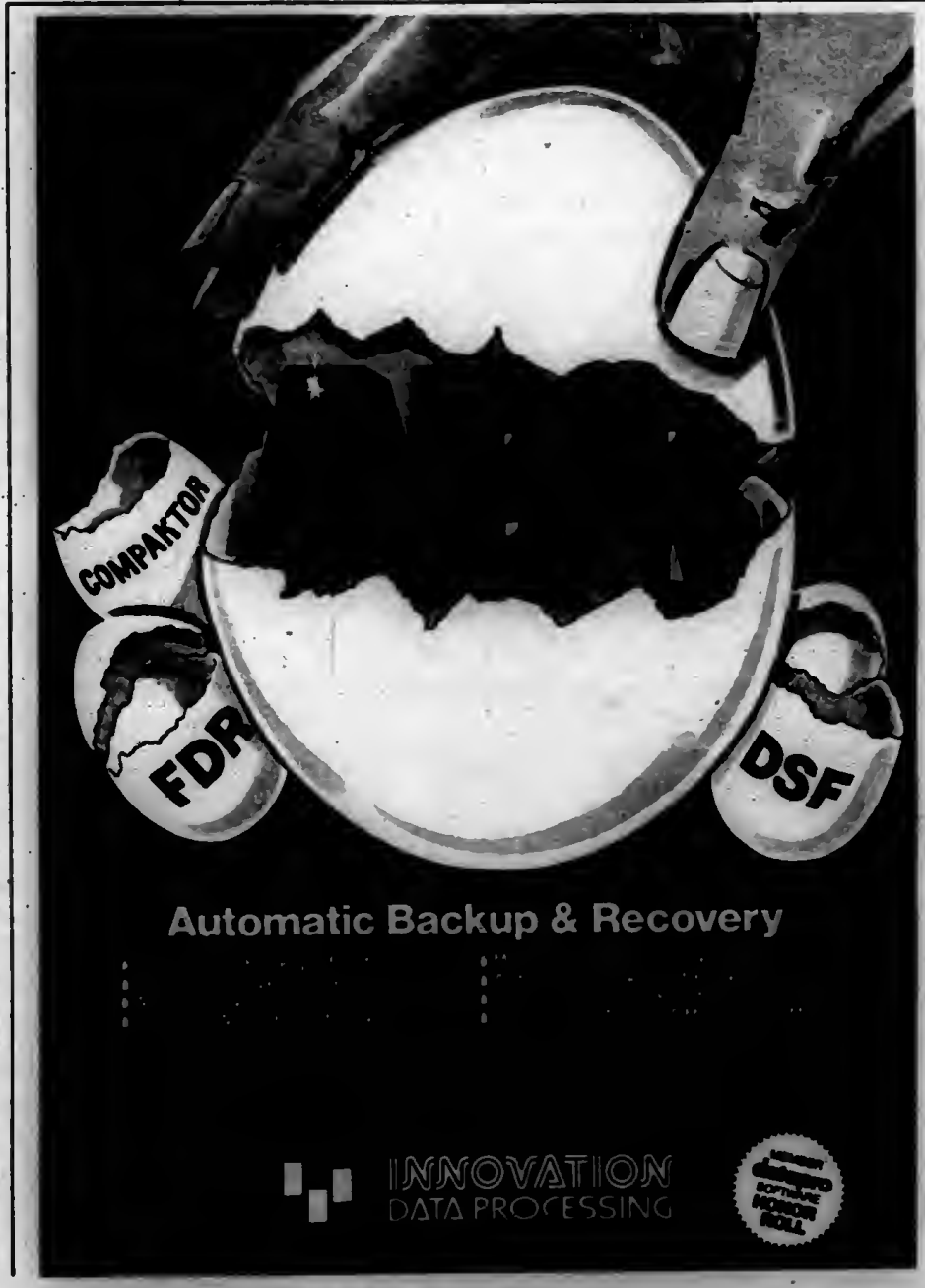
Between 1984 and 1986, IRS plans call for replacing the nine IBM and plug-compatible systems at its national computer center, which will involve, the GAO noted, conversion of over 2,000 applications programs, which for the most part are now written in ACL.

Currently, the GAO said, the center's computers are configured in such a way that "system capabilities are grossly underutilized." Through "modern automated scheduling techniques and resource requirements statements" the center could increase the productivity of its two IBM 370s and its Itel AS/6, possibly allowing the elimination of some or all of its six IBM 360/65s.

According to IRS Commissioner Jerome Kurtz, the agency is already moving to implement many of the GAO recommendations. With the Social Security Administration, IRS is seeking ways to increase the filing of information returns on computer-readable media and is considering the use of OCR equipment to transcribe paper returns.

The IRS has begun redesigning its returns information processing system, including rewriting the service centers' programs, Kurtz said.

At the national computer center, the staff has installed an MVS operating system on its 370/168 system to increase efficiency, and acquisition of an automated scheduling system is under consideration, he told GAO.



IBMers Expected to Fill Reagan Appointments

(Continued from Page 1)

Others include T. Vincent Learson, retired chairman of IBM and an ambassador to the Law of the Sea Conference during the Nixon years, and William T. Coleman Jr., now a partner with O'Melveny & Myers and former Secretary of Transportation under Nixon.

With Reagan seeking out women for high posts, another IBM director has a shot for a high administration office. Carla Anderson Hills, presently a partner with Latham, Watkins & Hills, was formerly Secretary of Housing and Urban Development during the Nixon years.

Bechtel Connections

Perhaps the most interesting connection comes through the Bechtel Group, whose chairman, Stephen D. Bechtel Jr., tops the IBM list of directors. This San Francisco-based construction firm has several of Reagan's top advisers on its payroll.

For example, George Schultz, who has served both Republicans and Democrats since the Eisenhower years, is one of Reagan's top policymakers in the economic arena today.

While Schultz has been mentioned as a possible Secretary of State, this may be unlikely because supporters of Israel in the Senate may object to connections with Arab countries through Bechtel business. However, he may end up with the far more powerful post of White House chief of staff.

Another Bechtel power is Caspar Weinberger, who served in the Nixon years as Secretary of Health, Education and Welfare. Weinberger was Reagan's first finance director when Reagan was governor of California and now serves as head of Reagan's task force on spending controls — an area Reagan has earmarked for early action in the new administration. He may end up as Secretary of the Treasury.

In addition to all the IBMers who may be moving to Washington to take up posts vacated by others with IBM ties, another computer industry executive has a good chance to get the top Defense Department post. David Packard, chairman of the board at Hewlett-Packard Co. Packard served as an Undersecretary of Defense during the Nixon years and is possibly slated for higher things in the Reagan administration.

Government in Waiting

The IBM board in fact has almost served as a "mini government in waiting" between elections. When the Republicans were in power, as during the Nixon years, the board was made up of many prominent Democrats, such as Cyrus Vance, Harold Brown and Patricia Harris, during the early 1970s. And when they went to Washington with the Carter election in 1976, IBM began appointing Republicans, such as Hills, Scranton, Coleman and Learson, mentioned above.

The tradition goes back to the early days of the company. Thomas J. Watson Sr., the founder of IBM as it is today, was active in politics, his greatest success coming when he backed Eisenhower for president of the Republican ticket in 1952.

His sons continued the tradition of activism in politics and began splitting their efforts between the two parties. For example, Arthur Watson, now deceased, always backed Republican causes and was rewarded with the ambassadorship to France by Nixon. On the other side, Thomas J. Watson Jr. was closely allied with Democratic causes and now serves as Ambassador to the Soviet Union — presumably until he will be replaced by the incoming Reagan administration.

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Inquiry II Issues Uncertain

(Continued from Page 1)

ruling allow AT&T, under certain circumstances, to add computer control to its basic communication offerings. For example, the phone company would be able to apply for waivers permitting a basic service to include code and/or protocol conversion.

Also, voice or data services utilizing network-resident storage facilities — such as videotex and electronic mail and message offerings — could be provided directly by telephone companies as part of their "basic" product line. In addition, the separate subsidiary, via waiver, could be allowed to own the transmission facilities supporting deregulated offerings, even though such facilities are the essential element of a basic service.

A related provision allows the subsidiary, as part of its initial charter, to own the wiring needed to "provide enhanced services within a customer's business location." It is not clear whether this authority extends to transmission circuits interconnecting a single customer's terminals installed at multiple, geographically separate locations.

All of these provisions are opposed by a number of computer industry organizations, notably excluding IBM. These organizations fear that enhancing basic services will give the phone company an unfair competitive advantage in the information services marketplace.

Another reason was stated by Tymnet, Inc, shortly after the initial version of the final computer inquiry decision was issued several months ago. "Given the expansive definition of basic services set forth in the final decision, and in view of the prospect that some level of protocol and code conversion may be permitted in conjunction with basic service, more and more services . . . will be absorbed into the basic service category and be subjected to regulation by the commission," Tymnet said.

The debate preceding last month's FCC vote featured sharp disagreement regarding key provisions. For example, Commissioner Abbott Washburn said he could not think of a circumstance in which the public would be harmed if the subsidiary had its own transmission facility.

Washburn was joined by Commissioner Joseph Fogarty, who argued that "the issue is whether the subsidiary will be able to get into the arena with other competitors . . . who have their own transmission capacity. We can't chain AT&T and then push it into the arena with IBM, Xerox, and Comsat."

However, FCC Chairman Charles Ferris accused Fogarty and Washburn of attempting to "rape" the FCC's emerging computer and communications policy. No court would go along with the idea, he said.

In view of this and other disagreements, it is likely the final text of the order approved last month will differ in at least some respects from what the commission appeared to decide last month. The text will not be released for several days.

Further Complication

Another complication is the commission's decision to resolve some issues through further proceedings. Besides terminal equipment deregulation, there will also be an inquiry into the question of what protocol and code conversion features should be included in basic services.

Meanwhile, an AT&T spokesman said the phone company is "considering" whether to ask for clarification of the company's 1956 Consent Decree. A key question will be the commission's conclusion last May, reaffirmed last month, that the phone company can offer enhanced services, like on-line DP, on a deregulated basis subject to FCC authority if and when the commission decides such intrusion is necessary.

The decree, basically, bars the phone company from offering nonregulated and/or noncommunication services. The commission argues that enhanced services, as defined in the computer inquiry decision, are "incidental" to communications.

The Justice Department, along with much of the computer industry, insists this reasoning is fallacious. In any event, the final word on what the Consent Decree means has to come from a court, not the FCC, the critics say, and the FCC, by assuming the role of interpreter, is exceeding its authority.

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Where Are the Trainers To Teach Engineers?

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Joint industry-academe programs to boost U.S. engineering education can help relieve shortages of engineers in computer science and other professions, but the programs face many logistical problems.

Panelists at a recent National Academy of Engineering (NAE) symposium here noted that career demands on both private industry engineers and university instructors leave little time for engaging in industry-university cooperative programs.

A DP industry engineer's job "cannot just simply be put on ice" while he goes off to a temporary teaching assignment, said Jerrier A. Haddad, IBM vice-president for Technical Personnel Development.

"He's trying to pursue a career in the company," Haddad said of the industry engineer. If he takes a year off to teach, "when he gets back he doesn't even have a desk." Because his company work is so interrelated with the work of his colleagues, the industry professional often cannot be spared, according to the IBM executive.

Similarly, it was suggested by several symposium participants that the best professors are the busiest, not just with teaching but with their own research projects as well. It is very difficult for them to "free up their time" to work in industry for any length of time.

Personnel Exchanges

Echoing Haddad's call for "accommodation" between universities and industry that will allow more short-term cooperative programs, MIT President Paul E. Gray said there is a need for "some short-term, rather intensive" industry-university personnel exchanges.

The Oct. 30 symposium was particularly timely, coming as it did on the heals of a government study showing a downturn in U.S. engineering education, particularly in the field of computer science [CW, Nov. 3].

A similar report by a NAE task force in April arrived at many of the same conclusions as the government study. Declining general science education in the U.S. coupled with problems of obsolete university facilities and "major problems in filling university faculty positions" are worrisome trends despite the generally good state of engineering education in this country, NAE said.

While there are particular problems of inadequate numbers of computer science students, the information industry itself is exacerbating the overall problems of engineering education, according to MIT's Gray.

Gray said the rapid growth of information processing capabilities plus the need to apply computer science to growing national problems, such as declining energy supplies, are creating "a vast new demand" for computer science engineers.

Because this demand is not being met by colleges and graduate schools, the computer industry, already offering high salaries to attract trained engineers, will drain the market of engineering professionals, creating additional burdens on other engineering occupations, he said.

Considerable Difficulties

Many of the NAE panelists agreed on the benefits of programs giving university faculty access to industry experience and facilities while industry supplies teachers on a temporary basis. But they also agreed, there are considerable difficulties in making the programs work.

C. Gordon Bell, Digital Equipment Corp. vice-president of engineering, remarked that "to get anything out of these programs, one has to put an awful lot into them" They can require a large investment not only of money but of the time of "the best people at both ends." The eventual commitment can be "surprisingly steep," Bell said.

In the same vein, IBM's Haddad said although his company has many programs for providing university education and teaching experience for employees, as well as for providing company facilities to university professors, IBM must also expend great effort on in-house engineering education.

"A very, very large in-house training effort" is necessary because company engineers must be kept abreast of the computer industry's rapidly changing technology, Haddad pointed out.

Also, most employees with bachelor's degrees come to the company with an education background that is for the most part fundamental and not specifically suited to their employement responsibilities. For them, continuing company provided education is critical.

Nevertheless, he added, IBM has found that its best employees, those that develop the fastest and advance the fastest, are by and large those who arrive with bachelor's degrees and later receive graduate degrees while employed by the company.

In the final analysis, Haddad and several of the panelists suggested, a strong commitment to making industry-university programs more flexible will allow more people from both sectors to benefit.

"We should do with our industrial people what they do best," Haddad said, suggesting industry engineers could be very useful teaching short case study courses. This would give students the benefit of practical industry experience while not detracting from the engineer's company work load, he said.

What an industry engineer has most to offer, according to Haddad, is what he has learned on the job. Conversely, good industry engineers do not necessarly make good instructors, according to the IBM vice-president, who said academic curricula are probably better taught by academics.

Correction

The maintenance included with the basic two-year lease plan for Telex Computer Products, Inc.'s 8020 tape drives [CW, Oct. 20] covers 24 hour/day, 7 day/week, according to a company spokesman.

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Variety of Minis Available at a Glance

	512K bytes	2M bytes	256 bytes	512K bytes core; 2M bytes semiconductor	2M bytes	256K per application processor
	32	Up to 16 under firm's Cande on-line file handling program	64	64	128	5,400 with 255 linked processors
	9.6K bit/sec	9.6K-50K bit/sec	19.2K bit/sec	19.2K bit/sec		9.6K bit/sec
	Bisync, IBM 278 or 3780, Basic Four Business Information Network (BFBin)	Burroughs Data Link Control (BDLC) Bisync, System Communication Module (SCM), Remote Hasp, Supervisory Message Control System (SMCS), Burroughs Network Architecture (BNA)	Bisync (IBM BSC), X.25, Hasp II, IBM 2780 or 3780	Bisync; X.25; IBM 2780 or 3780; AOS, RDOS, Hasp II; Xodiac network management system	Bisync, X.25, 2780 or 3780 via RJE 80 emulation, Hasp II, Multiple line support via AOS/VS	ARC-ARC communications via Lightlink; Infoswitch Long Distance Control System (LDCS); communications to IBM 360 or 370 via channel adapter
IBM 3270	No	No	No	Yes, via RCX 70 emulator	Yes, via RCX 70 emulator	No
Processor-to-Processor Networking Capability	Yes, BFBin	Yes, BNA	No	Yes	Yes	Yes
Operating System(s)	Boss II	Master control program II, III IV; Network Definition Language (NDL); Text Editor; Computer Management System (CMS); Odesy on-line data entry program	Interactive Cobol Operating System (ICOS), Single or Multi-user, RDOS	Advanced Operating System (AOS), RDOS	AOS/VS, AOS	Disk operating System
Languages	Business Basic III	Basic Interactive Basic, Cobol, Fortran, RPG, User Programming Language	Interactive Cobol, Commercial Basic, Mapped Basic, Fortran IV	Cobol, RDOS Cobol, RPG-II, Pascal, DG/L, Fortran IV, RDOS Fortran IV, Fortran V, Extended Basic, Business Basic, PL/I	32-bit: Fortran 77, PL/I, Basic; 16 bit: Cobol, Fortran 5, Extended Basic, PL/I, RPG-II, DG/L	Cobol, RPG Plus, Snap 3 assembler, Basic Plus, Scribe text O/P language, Databus, Dataform
Data Base Management System	No	Yes: Disk Forte/2, DMS II, Advanced Reporter II	No	Yes: DG/-DBMS, Dbam	Yes: DG/DBMS, Infos II with Isam, DBAM	No, but file processors provide file management and structures
Word Processing/-Electronic Mail	Yes: Both	No	No	Yes: WP, AZ-Text	Yes: WP AZ-Text	Yes, electronic message system (EMS), WP, Infoswitch
Maximum Disk Storage	300M bytes	804M bytes	Not Available	Up to 8.9M bytes per burst multiplexer channel (BMC)	6.6G bytes (24 disk drives)	180M byte/-system
Number of Installed Systems	Not Available	Not Available		Not Available	Not Available	About 600
Typical System Cost	610: $51,400; 730: $95,000	About $72,000	CS/50: $34,485; CS/70: $77,050	AP/130: $50,400; M/600: $84,000	$151,200 (5M-byte memory)	$59,950 (5- to 60K-byte application processors + one file processor)

For Users Considering the DDP Route

(Continued from Page 1)

However, despite present misconceptions, DDP has been forecast as a fast track in the computer processing arena. The DDP market, with its minicomputers, terminals and communications controllers, is expected to increase nearly three times to $6 billion by 1980, according to a recent Frost & Sullivan, Inc. study.

Moreover, 51% of the management information systems (MIS) executives surveyed in a just-released Booz, Allen & Hamilton report admit that distributed processing — or distributed information processing, as the research firm is fond of calling it — is a definite part of their business strategy.

However, there are some tough barriers to overcome before distributed processing takes root and becomes "a way of life," Held remarked.

Executive Problems

While the technology, for the most part still in its infancy, is a problem, DP managers and executives — the same ones that swear allegiance at each and every DDP sermon — are the biggest obstacles to the concept, Tandem's researcher stated.

People at executive DP levels "have empires to protect and have built their careers around having large, centralized data management shops. And, in lots of cases, they're the ones deciding the directions of the company," he noted.

In addition, executives who give their imprimatur to DDP want to be assured that they have centralized control over the information and "their networks are going to be reliable enough so that when they need information, they can go out and get it," Held pointed out.

Other Roadblocks

There are other roadblocks facing the successful implementation of true DDP systems. For instance, fragmenting a DP system might not only result in a loss of centralized control, but might cause a duplication of effort and data.

In addition, accessing that data may be harder from one point than another, Dr. Dixon R. Doll, president of DMW Telecommunications Corp., warned.

Speaking last September at the Data Processing Management Association (DPMA) Education Foundation's first national symposium on office automation, Doll echoed many of Held's cautious views on the state of DDP and offered a few observations of his own.

While the DDP momentum will be fueled by the user's desire to reduce costs and the plummeting price of hardware, end users are currently expecting too much from the technology, Doll said.

Personnel Costs

"People have a natural tendency to believe everything the vendors tell them," he observed, especially about how DDP will save money and change the face of computing.

The fact is that although DDP will save users a great deal in communications costs by avoiding rocketing communications tariffs, it will create multiple data centers and escalate rising people costs, Doll contended.

Currently, personnel costs are increasing from 8% to 12% per year, according to another source, and will jump considerably when centralized DP shops are broken up into localized fragments.

Another problem that is presently the focus of much debate is compatibility among different vendor systems, Doll continued. Vendors, today, don't offer any turnkey off-the-shelf solution to support a multimedia mix of equipment.

However, organizations such as the International Standards Organization (ISO) are working on an open system architecture that would be designed to recognize different protocols at various network ends, Doll explained.

In addition, a lot of companies are banding together and commiting themselves to one communications standard, especially in developing future products or systems.

Most notably, Digital Equipment Corp. and Intel Corp. have agreed with Xerox Corp. to adopt Ethernet as a standard, with Intel supplying the

(Continued on Page 13)

Product Spotlight

	[illegible]	Digital Equipment Corp. PDP-11	Digital Equipment Corp. VAX-11/780	Digital Equipment Corp. VAX-11/780	Four Phase Systems, Inc. IV/90	Harris Corp. 1600 Series
[illegible]	120K bytes	2M bytes	8M bytes (local)	2M bytes	480K bytes	192K bytes
[illegible]	Up to 8 local or remote	128	Up to 96 interactive users	32	32	80/system
[illegible]	9.6K bit/sec	56K bit/sec	56K bit/sec	56K bit/sec	9.6K bit/sec	4.8K bit/sec
[illegible]	Bisync, TTY, Datapoll, Multilink emulator for Honeywell, Burroughs, IBM, CDC and Teletype batch terminals	DDCMP (physical line control), Digital Network Architecture (DNA), Decnet, Ethernet-type under development, 2780 or 3780, Hasp	Decnet, CDC, MUX200, SNA emulator, 2780 or 3780, Hasp	Decnet, SNA emulator, MUX200, 2780 or 3780, Hasp	Bisync, SDLC, 2780 or 3780, Hasp	IBM SNA-compatible; 2780 or 3780, Hasp; Univac vac, Burroughs, Honeywell, CDC network emulator
IBM 3270	No	Yes	Yes	Yes	Yes: via software emulation	Yes
Processor-to-Processor Networking Capability	Yes: Via Datapoll	Yes	Yes	Yes	No	Yes
Operating System(s)	Diskette Operating System (DOS.G) remote disk operating system (Remdos)	RT-11; RSX-11, 11D, 11M, 11M Plus, DMS 11, RSTS/E	VAX/VMS	VAX/VMS	Interrupt Disk Operating System (Idos); Disk Operating System, for custom program development	Ecos disk-based operating system
Languages	Basic Plus, Fortran, Anti Cobol, RPG Plus, assembler, Scribe, Databus, Dataform	APL-II, Basic-11, Plus, Plus II, Cobol, Coral 66, Dibol, Focal, Fortran IV, IV, Plus	32-bit Fortran, Cobol, Bliss, Pascal, Basic, RPG-II, Coral 66, assembler	Same	Cobol, RPG, Network Transaction Processing (NTP) package, Data IV (allows CPU to be used es shared processor data entry system)	APL, Algol, Basic, Multi-Basic, Cobol, Fortran PL/I, RPG
Data Base Management System	No, but file handlers provided through DOS.G	Yes: DBMS II	No, but Datatrieve provides report generation and data maintenance	Same	No	Yes
Word Processing/-electronic Mail	EMS, integrated electronic office system	Yes: WP	Yes: DX/UMS WP utility	Same	WP	WP, EM under development
Maximum Disk Storage	4M byte/diskette, 40M byte/-disk cartridge	Not Available	2,400M bytes	Not Available	About 273M bytes of cartridge, diskette and hard disk storage.	About 176.5M byte/system
Number of Installed Systems	About 2,600	More than 100,000 (May 1980)	More than 2,000	Introduced last month, initial shipments this month	Not Available	Not Available
Typical System Cost	$10,975 (60K bytes of user memory)	$44,900 (PDP-11/44, 256K-byte memory)	$141,300 (512K-byte memory)	$89,900 (512K-byte memory)	Not Available	$114,150 (192K-byte memory and 12 stations)

Representative Minis for Users Considering DDP

	Hewlett-Packard Co. HP 3000	IBM Series/1	IBM 8100	Modular Computer Systems, Inc. Classic 7000 Series	Perkin-Elmer Corp. 3000 (32-bit)	Prime Computer, Inc. Series 50
Maximum Main Memory	1M byte	256K bytes	1M byte	8.1M bytes	18M bytes on 3240	8M bytes
Maximum Number of Interactive Terminals	32 (Series 30/33) or 64 (Series III)	Up to 100, but maximum device address range is 256	48	More than 100	More than 100	64
Maximum Line Speed (Remote)	56K-bit/sec	9.6K bit/sec (SDLC); 56K bit/sec (BSC)	9.6K bit/sec	256K bit/sec (on high-end machines)	56K bit/sec	19.2K bit/sec
Communications Protocols/Networks Supported	2780 or 3780, Hasp, HP's Distributed System (DS) 3000 network software plus distributed facilities in operating system	SNA or SDLC under Real-time Programming System (RPS) only, BSC; IBM 2740, 2741, 3101 and most other IBM facilities	SNA; 2780 or 3780	Maxnet (distributed network system), SDLS, HDLC, Bisync, 2780 or 3780, Hasp	Level II 2780 2780 or 3780, TTY	Primenet X.25 network, DPTX 3271 or 3277, 2780 or 3780 emulation, also CDC 200, Univac 1004, Honeywell Gerts and ICL 7020
IBM 3270	Yes, but only on Series III	Yes	Yes	Yes	Yes	Yes
Processor-to-Processor Networking Capability	Yes	Yes	Yes	Yes, but limited	No	Yes: Via Primenet.
Operating System(s)	MPE-III virtual memory executive	RPS, Event-Driven Executive (EDX), Control Programming Support (CPS)	Distributed Processing Programming Executive with local program development and execution; DPCX for use with IBM 3790 distributed data or 3730 systems	MAX III, IV; Maxcom	OS/32 Multitask, multiprogramming system	Primos
Languages	RPG-II, Cobol II, Basic, Fortran, SPL (assembly language)	RPS: Cobol, Virtual Cobol, Fortran IV, PL/I, Waterloo Basic; EDX: Cobol, Fortran IV, PL/I; CPS: Virtual Cobol	Cobol, Fortran, assembler	Fortran, Cobol, Coral 66	Basic; Cobol; RPG-II; Fortran IV, VII	Cobol; Fortran 66, 77; RPG-II; PL/I; Basic/VM; Pascal; macro assembler
Data Base Management System	Yes: Image and Query bundled into MPE-III	No	DTMS data base and transaction management system	Yes: Infinity package, Cincom's Total	Not Available	Yes
Word Processing/Electronic Mail	No	WP, EM (text-routing system)	WP and FM and Distributed Office Support Facility (DOSF)	WP	WP, PE text editing package	WP, EM via Prime's office automation system
Maximum Disk Storage	960M bytes	No specified limit, logical maximum of 512M-540M bytes	580M bytes	Not Available	Not Available	4.3G bytes with two disk subsystems
Number of Installed Systems	More than 2,000 (exact figures not available)	Not Available	Not Available	Not Available	Not Available	Not Available
Typical System Cost	$49,750 (256K-byte memory with 4 terminal ports)	About $31,000 for basic system	$36,440 (8140 with 256K-byte memory and 3 ports)	About $68,200 (256K-byte memory)	$33,500 (3220 with 256K-byte memory)	$114,000 for Prime 650 (512K-byte memory and one terminal)

Profiled

(Continued from Page 11)

semiconductor manufacturing and design and DEC supplying the knowledge of how to use such a system.

Recently Hewlett-Packard Co. joined the communications triumvirate in their quest

Product Spotlight

for a single transmission avenue, and more companies are expected to follow.

One-Man Band

There are those, however, who believe that although DDP has a definite place in the end-user picture, there is no way it will entirely push centralized minicomputers or mainframes out of the frame.

Henry L. Apfelbaum, a research scientist at Univac whose job it is to identify technology trends, admits that DDP will offer substantial computer power, but the information will not be as easy to access with a centralized system.

The difference between a DDP system and a centralized mainframe is like "the difference between a one-man band and an orchestra," Apfelbaum recently said at a meeting of Univac Series 1100 computer users in Florida. Quite simply, data bases are more useful if they are centralized, he added.

On the other hand, Apfelbaum did promote the concept of a "mission processor" that would perform functions definitely separate from the main processor and be entirely offset from the user's system.

For skeptics who believe that DDP and true decentralization are just around the corner, Univac's researcher warned his audience not to hold their technological breath.

"Anything that we expect to be working five years from now has to be in the research labs today," he said, noting that he doesn't see "the magic" anywhere.

In the final analysis, no matter how you describe it — whether it involves a few scattered terminals or is an octopus-like arrangement of individual, yet connected computers — DDP will stir up a great deal of trouble, Tandem's Held stated.

"There is nothing extremely difficult about solving the [technical] problems." But, emotionally, DDP will cause "almost as much trouble as did going from all keypunch- and card-oriented systems to terminal-oriented systems," he observed.

"There is a resistance because that's the way things have always been."

	[illegible]	Tandem Computers, Inc. T/16	Wang System 50 (32-bit)	Univac V77	Wang Laboratories, Inc. VS Series 16-& 32-bit	Xerox Corp. Diablo [illegible], System 610
Maximum Main Memory	2M bytes	2M bytes	2M bytes	2M bytes	2M bytes	64K bytes
Maximum Number of Asynchronous Terminals	64	32	128 remote, but can support 255	About 20 (variable)	128	9
Maximum Line Speed (Remote)	19.2K bit/sec	56K bit/sec	9.6K bit/sec	56K bit/sec	9.6K bit/sec	9.6K bit/sec
Communications Protocols/Networks Supported	TTY, Hasp, Univac protocols and Univac's Distributed Communications Architecture (DCA)	End-to-end packet protocol; Level II X.25 pending; 2780 or 3780, Hasp	Integrated Communications Access Method (Icam), 2780 or 3780	TTY, Univac DCA and SNA emulaton; Level III X.25 under development; Hasp	TTY, IBM 2741, 2780 or 3780, Hasp, Burroughs TC 500	Ethernet, TTY, 2780 or 3780
IBM SNA	No	Yes	Yes	Yes	Yes	No
Processor-to-Processor Networking Capability	Yes	Yes: between Tandems	Yes: Univac DCA	Yes	No	Yes
Operating System(s)	Real-Time Monitor (RTM), Mapped Programming Executive (MPE)	Guardian/-Expand network operating system	OS/3 Enhanced, Extended System Software (ESS)	Vortex I, II; Summit	Virtual Storage Operating System	Not Available
Languages	Fortran 66, 77; Pascal; Basic	Fortran, Cobol, Mumps, Tandem Application Language	Basic; BAL, Cobol, UTS 400 Cobol, Fortran IV, RPG-II, Escort	Fortran IV, Cobol, Basic, RPG-II, RPG IV	Cobol, RPG-II, Basic; Cobol Assembly, PL/I, VS Fortran	Not Available
Data Base Management System	No	Yes: Encompass	Yes: Data Management System and Information Management System	Yes: Cincom's Total	Yes: VS advanced data management system & DBMS	No
Word Processing/-Electronic Mail	No	EM	No	No	WP, EM: Mailway	WP
Maximum Disk Storage	Not Available	2G byte/-controller, 32 controllers per processor	952M bytes	Not Available	4.6G bytes	5M bytes cartridge, 20M bytes disk
Number of Installed Systems	Not Available	1,066 (June 1980)	Test sites only	Not Available	Not Available	Not Available
Typical System Cost	$39,500 (32/57 with 256K-byte memory)	$85,375 (2 384K-byte processors with room for 2 additional CPUs)	$53,874 (Model 3 with 262K-byte memory and one workstation)	$135,000 (V77-800 with 256K-byte memory and 8 terminals)	$19,000 (120K-byte memory and basic software)	About $18,950

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EFT Seen Restructuring National Economies

By Brad Schultz
CW Staff

ATLANTA — Transborder data flows and electronic funds transfer (EFT) links may be restructuring national economies with far-reaching consequences for international relations.

Recent speakers at the International Conference on Computer Communication (ICCC) gave attendees those conclusions in several different sessions.

A worldwide economic depression could result if national governments clamped down on transborder data flows, according to Harry L. Freeman, an American Express Co. senior vice-president.

In many nations, the data flows and sophisticated network services are available but cannot be digested, indicated Prof. Herbert S. Dordick of the University of Southern California's Annenberg School of Communications. "Free flow and equality of access does not guarantee equality of results," he said. "Access and power do not necessarily equate; information is power only if it is used powerfully."

Disturbing Parallels

Freeman found "disturbing parallels between the situation today and that in 1930," when President Herbert Hoover signed the Smoot-Hawley Tariff Act. "At both points, economic activity was falling," Freeman noted, "and major domestic industries petitioned for relief against imports."

Smoot-Hawley forced foreign companies to sell their wares in the U.S. at higher costs than those of competing domestic companies. In reaction, the nation's trading partners levied similar controls against U.S. exporters, contracting trade throughout the world. This deepened the depression, Freeman noted, and accelerated economic nationalism — a principal cause of World War II.

Privacy concerns are the pretext, if not always the real impetus, behind restrictions on transborder data flows in many countires, some panelists indicated, and these restrictions hamper trade.

From a privacy standpoint, national governments worry about exporting sensitive computer-stored data; but they also worry about protecting domestic vendors from losing business and, often, employees to vendors based beyond their borders.

The latter problem frequently confronts countries visited by U.S. vendors, Dordick noted. Among the remedies available to these nations is communications tariffs.

In this way, "Japan has effectively locked out U.S. firms by means of unusually high local network costs and government restrictions on obtaining domestic circuits," Dordick stated. "Control Data [Corp.] had to wait 27 months for a circuit, only to find that government restrictions on the circuit made it almost impossible to operate," he added.

Sovereignty Element

"There is a strong element of sovereignty," Dordick continued, in the "game" of developing international data communications standards. No nation wants to be locked out of participation in transparent networking, whereby devices of many different brands communicate over common links, but no nation wants adoption of standards incompatible with its present investment in computing and networking resources.

And the origin of international providers of network services means jobs. It means, for example, that between 30,000 and 100,000 jobs will be created outside Canada by 1985 to give the country such services, according to estimates made a few years ago.

Freeman noted that developing telecommunications has long been "a driving force of change in world economies." Even in war, nations are reluctant to destroy the communications links of their enemies, a Satellite Business Systems (SBS) executive maintained in another conference session. "They would rather feed on those links," he asserted when asked about security for the first SBS satellite, scheduled for launching this week.

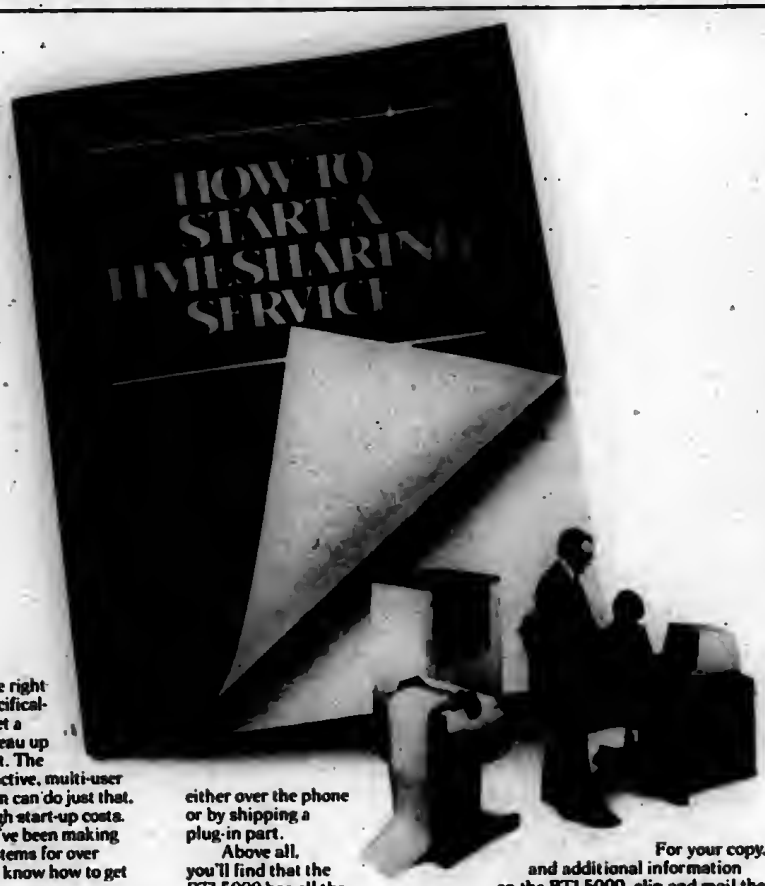
Nevertheless, sources close to the Pentagon have told *Computerworld* that U.S. defense strategists are alarmed by the vulnerability of communications satellites to radiation following thermonuclear explosions.

At the recent Interface West conference, one speaker said he learned from someone in the U.S. intelligence community that a 40 megaton blast on the moon's surface could completely wipe out the world's satellite links, on which much commerce depends.

EFT Raids

However, SRI International, Inc.'s Donn B. Parker told an ICCC session that raids of EFT links will be a more practical approach to destroying an enemy nation than thermonuclear warfare [CW, Nov. 3]. Tampering with the assets that network systems store electronically can plunge a country into a depression, Parker remarked, although other countries that depend economically on the victim would also suffer.

That is why the U.S. is more likely to exprience such assaults — which, to have great impact, would entail theft of at least hundreds of millions of dollars — from impoverished nations or terrorist groups with little to lose if the U.S. economy shattered, Parker maintained.



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In Search for Productivity Gains

Managers Advised to Copy Japanese Practices

By Jeffry Beeler
CW West Coast Bureau

LOS ANGELES — U.S. business managers, including management information systems (MIS) chiefs, would probably do well to emulate Japanese management practices as they search for ways to improve their companies' productivity and worldwide competitive position, a Southern California computing executive advised here recently.

Japanese managers could teach their American counterparts plenty about how to show genuine concern for their personnel, how to decentralize management decision-making and how to make their employees professionally well-rounded through effective career pathing, according to Southern California Edison Co.'s Administrative Vice-President Robert Umbaugh.

The effectiveness of Japan's management practices accounts for much of the country's high productivity rate and for its consistent ability to expand its market share in key U.S. industries like autos, steel and, increasingly, high technology.

For U.S. managers to duplicate Japan's business success, they will first have to overcome their natural resistance to professional change and revise some of their most basic assumptions about how people and other corporate resources should be managed, Umbaugh said during a seminar sponsored by the Society for Management Information Systems (SMIS).

Japanese firms and personnel present a striking contrast to their American counterparts in their turnover rates, decision-making processes, attitudes toward responsibility, methods of controlling product quality and several other important factors.

Unlike American workers, Japanese employees typically spend their entire careers with just one company. This emphasis on long-term employment gives Japanese companies and personnel at least one important advantage over their U.S. competitors.

Because Japanese managers can count on an almost perfectly stable work force, they can afford from time to time to transfer their employees to different jobs within the same company, Umbaugh said during the seminar, which was sponsored by the SMIS' newly formed Southern California chapter. Every few years, most subordinates in large Japanese firms are rotated to new job slots that bear little if any resemblance to any positions they have ever held previously.

This system of periodic job rotation allows Japanese employees to become acquainted with many if not all facets of their companies' operations and gives them an opportunity to follow varied career paths.

In the U.S., of course, the employment picture looks vastly different. Only rarely do American workers stick with one firm for their entire careers. Instead, job hopping is an accepted way of life, especially among programmers and systems analysts, whose services are constantly in high demand.

The frequency with which most U.S. workers switch employers prevents American firms from imitating the Japanese practice of schooling employees in multiple management disciplines. As a result, U.S. employees tend to be highly specialized in their work skills and to hew closely to well-defined, predetermined career paths, Umbaugh said.

A good example of employees who work all their lives within a narrow technical specialty is computing professionals, he added.

Umbaugh urged his fellow information systems managers to minimize their field's specialization and observed that the most skilled systems analysts are often occupational hybrids who have worked long-term both in computing departments and in nontechnical user environments.

Many other differences in management practices also separate Japanese firms and personnel from their American counterparts. Japanese employees pledge their first allegiance to their companies, whereas U.S. workers reserve their main loyalty for their professions.

In Japan, management decisions usually involve group consensus, unlike U.S. decision-making, which is typically nonparticipative. The Japanese attach more importance to collective achievement than personal glory, while Americans do just the opposite.

Japanese workers know exactly what level of product reliability is expected of them and meet that standard without being told, whereas U.S. employees work under highly formalized, quality-control mechanisms, Umbaugh said.

Americans and Japanese also differ substantially from each other in the degree of respect they show for people. U.S. managers, including those in the information systems field, often treat their employees like "Social Security numbers" and do a "lousy" job of integrating new personnel with existing staff members, Umbaugh said.

Japanese executives, by contrast, show a sincere and abiding interest in their employees' well-being and are even expected to help their subordinates overcome their personal problems.

Not all U.S. companies, however, conform to the classic American management style. Through means that have yet to be fully explained, some U.S. firms have developed hybrid management practices that combine the best elements of the Japanese and American models, Umbaugh said.

IBM provides an outstanding example of an organization where the synthesis of the two management types has yielded impressive results, he added.

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Rookie Users Warned Of Micro Shortcomings

By Ann Dooley
CW Staff

NEW YORK — Small computers may live up to their name in size and price, but they can still turn out to be large mistakes for first-time users, according to several experts in the microcomputer industry.

Speaking at the recent National Small Computer Show here, microcomputer users and vendors advised large numbers of first-time users that the road to automation may not be smooth for all of them. The advice given to this year's group of eager computer-user attendees did not vary significantly from advice given to other groups in other years, proving that while technology may be advancing, the problems users face remain the same.

"If you're thinking of buying a microcomputer, the most important thing to do is sit down and decide exactly what you need," David Benevy of the Computer Mart of New Jersey told the audience.

A user must determine what tasks are needed and determine the benefits that can be derived from them, he stated. Will installing a computer system save manpower? Will it improve performance and speed of access to the data? Once the tasks are known, a user should look for a machine that is best suited to those needs.

Users should also determine whether the procedures can be specified and interchanged from human control to machine operations, Benevy stated. Sometimes users discover it is more expensive for a computer to do the work than it is to use the clerk who was handling the job for the last 10 years.

No one should assume that a computer will invariably increase profit or company performance. Many business people who buy a computer, install it and then expect instant results are usually disappointed, he noted.

Speaking before another group of attendees, Stan Veit, president of Associated Computer Industries, outlined the growth of the small computer industry from the development of the S-100 bus manufacturers to the entrance of the new vendors such as Radio Shack and Apple Computer, Inc. Veit noted that many of the original companies are no longer in business because, as technicians, they could not compete with the new business-oriented companies that started up.

Software is the biggest problem small computer industry faces today, Veit noted, adding that software from minicomputer systems is frequently stripped down to run on the smaller systems. The safety "error tripping" devices are most frequently left out of these converted software programs which do nothing to improve quality, he noted. The whole industry suffers from it, he said, not just the user.

Now, with larger computer companies like IBM and Digital Equipment Corp. about to enter the arena, Veit predicted that the rate of change in the field would accelerate rapidly.

Veit noted that many businesses will continue to look toward automation as labor costs continue to climb, but a computer system is still a large investment and, once purchased, a user is pretty well locked into it, he warned.

Users should hire a consultant to assist them in selection and should also talk with other users of any system they are considering, he noted. One important thing to remember is to always buy from a company that looks as though it will be around for awhile. When buying a system, Veit cautioned the audience, every inexperienced user is taking a big chance.

Inouye Would Decline Chair Of Communications Subcommittee

By Marcia Blumenthal
CW Staff

KAUAI, Hawaii — Sen. Daniel K. Inouye of Hawaii, the ranking member on the Senate Communications Subcommittee, recently said he would not accept the chairmanship of that committee if it were offered to him.

Sen. Ernest F. Hollings, now chairman of the Communications Subcommittee, is expected to resign his chairmanship in the near future to concentrate on his duties as chairman of the Senate Budget Committee. That would clear the way for the appointment of Sen. Wendell H. Ford as chairman of the Communications Subcomotitee, an event Inouye said bodes well for the computer industry.

Speaking at the 20th annual meeting of the Association of Data Processing Service Organizations, Inc. here recently, Inouye said a new set of hearings is in store for the industry. However, the Hawaiian Democrat predicted the extra effort would have a favorable result.

Inouye called on the government to provide legislative assistance — not subsidies — for the industry. "We must apply some semblance of reciprocity with our allies," he chided, noting that "we open our doors for any and all who want to establish businesses here.

Sen. Daniel K. Inouye

"For every car the U.S. sends to Japan, it returns 165 cars," he added.

The government knows of the trade barriers put up by other countries, he continued, but to date has done little to alleviate the problem.

Inouye said he would continue as the ranking member of the Communications Subcommittee, but would also focus considerable energy on maritime problems.

Study Shows Trend To Technical Illiteracy

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Analysis of American education systems reveals a dangerous "trend toward virtual scientific and technological illiteracy" on the part of high school and college graduates, according to a new government study.

"The number of young people who graduate from high school and college with only the most rudimentary notions of science, mathematics and technology portends trouble in the decades ahead," said the study, prepared for President Carter by the National Science Foundation (NSF) and the U.S. Department of Education.

In a society dependent on all sorts of computer and engineering technology, the current downgrading of scientific education implies that "important national decisions involving science and technology will be made increasingly on the basis of ignorance and misunderstanding," according to the government assessment.

While general in nature, the study draws particular attention to the problems of computer education. U.S. school systems virtually ignore the electronic revolution, the report said, which may lead to a long-term shortage of computer professionals in this country.

This declining emphasis on science and mathematics in the U.S. is in marked contrast to other industrialized countries, such as Japan, West Germany and the Soviet Union, all of which, the report noted, "provide rigorous training in science and mathematics for all their citizens."

The report blamed the situation in part on a nationwide trend toward reduced graduation requirements and a "back-to-basics" education approach that does not view science as one of the basics. Science is diminished in such programs, the report said.

"Problems arise when the acquisition of 'basic skills' becomes the curriculum rather than simply a foundation upon which students can build their ability to deal with more complex situations and problems."

The study recommended a number of programs the Education Department and NSF can undertake to increase public awareness of the need for science and technology education. It also called for more government and industry assistance to help schools beef up their science curricula and provide better, more current equipment for teaching facilities.

A particular problem in this area is the rapid development of computer technology, which results in widespread obsolescence of school facilities, the report said.

Moreover, lack of adequate computer education at all school levels is symptomatic of the problems of science and technology education in general, the report said. "Since computers have come to exemplify the pervasiveness of technology, they provide a useful point of departure to grasp the significance, for society, of the full range of modern technology."

However, the report continued, "the school curriculum rarely considers the role of the computer in our society." Examination of existing curricula "would by and large offer little evidence of the existence of this electronic revolution."

The report said the NSF should build on existing programs to foster development of educational strategies and the software necessary to exploit modern electronics in schools and to introduce science and mathematics teachers at all levels to the uses of computer and communications technology.

Action Needed

It was noted corrective action is needed to match the scientific emphasis of U.S. competitors. Although a comparison of the U.S. and its competitors abroad suggests "our eminence in basic research is secure," the study noted "some anxiety" about engineering and computer professions.

"While the U.S. has current shortages and future shortfalls in these areas, the Soviet Union, [West] Germany and Japan are producing much larger proportions of engineers and applied scientists than we are.

"At the same time," the study said, "these countries are educating a substantial majority of their secondary school population to a point of considerable scientific and mathematical literacy, in part because they apparently believe that such literacy is important to their relative international positions."

In these countries people are educated in science in "far greater numbers" than are needed in purely scientific and engineering pursuits, the report noted. "In the Soviet Union and Japan, especially, managerial positions in both government and industry are heavily populated by people with engineering degrees."

This strong national commitment to quality science and mathematical instruction results in a "work force, which, at all levels, has a relatively high degree of science and mathematics skill, and this has been a factor in the very rapid expansion of technical industries" in those nations, the report said.

The report claims there is a direct correlation between the increase in technological literacy of Japanese and West German citizens and their countries' increasing productivity and share of world trade.

Sigi Meet to Offer Development Dialog

NEWPORT BEACH, Calif. — A System of Interactive Guidance and Information (Sigi) national conference will be held here Jan. 18-20 for computer specialists and career planning counselors.

Sigi is a computer-based aid to career decision making and planning. Representatives from some 70 colleges now using Sigi, along with prospective users, are expected to meet with members of the Sigi development team from Educational Testing Service, Inc., which sponsors the event, where they will exchange ideas on practices, problems and prospects with Sigi.

Further details on the conference are available from Educational Testing Service at Princeton, N.J. 08541.

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False Alert Pinned to Faulty Chip

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Intensive hardware and software analyses have confirmed an initial report that a faulty integrated circuit caused last June's false missile attack alert generated by the North American Aerospace Defense Command (Norad).

A report released by the Senate Armed Services Committee late last month said tests by Honeywell, Inc., Texas Instruments, Inc., Ford Aerospace and Communications Corp., Bolt, Beranek and Newman, Inc., and others, placed the blame on a faulty chip in a communications multiplexer.

A series of corrections has been initiated to prevent a recurrence of the June 3 false alert, according to the report, prepared for the committee by Senators Gary Hart (D-Colo.) and Barry Goldwater (R-Ariz.)

The faulty chip caused a Strategic Air Command (SAC) display system to show a submarine-launched missile attack on the U.S. SAC ordered bomber crews to start their engines to prepare to take off should the attack information be confirmed.

When other sensors and other Norad equipment failed to corroborate the SAC data, the alert was recognized as false and the bomber crews were ordered to shut down their engines but remain in their aircraft while Norad tried to pinpoint the system failure [CW, June 16].

'Prudent' Alert

Alerting the crews was "prudent," the report said. "It is quite appropriate and necessary that this step be taken very early to prevent any possible threat because there are very few minutes available for the aircraft to escape a threat.

"The fact that steps were taken to enhance survivability of the aircraft does not lead automatically to their dispatch on the nuclear attack missions," the report noted. "There are many more steps, all control! ! and executed by senior civilian and military leadership, that must be taken in order to dispatch on nuclear attack missions."

Although Hart and Goldwater concluded that "in no way can it be said that the U.S. was close to unleashing nuclear war as a result" of the incident, the senators found "there seemed to be an air of confusion, [at Norad] following the determination that the data was erroneous." The report contained a number of recommendations for improving the system.

Failure Explanation

In explaining the failure in the "427M" computer and communications system, the Senate report said the chip was part of a multiplexer that forms a message Norad transmits continuously to all command posts to ensure that communications lines are open and operating correctly.

The message, in the form of numbers indicating how many missiles have been launched, normally indicated zero, but the faulty chip caused some of the zeros to be replaced on a random and continuing basis with the number 2. When the alert was declared false, the system was shifted to backup equipment and the search for the failing equipment began.

Honeywell — which provided most of the 427M equipment — performed an equipment audit, and the Air Force performed a wire audit of more than 400 circuits in the system, according to the report. Several laboratory analyses concluded silver tarnish found on the chip's pins was not a factor in the mishap and blamed the chip itself for the communications failure.

Some of the "significant" corrective actions being taken include an MIT and Lincoln Labs analysis of the 427M "man-machine interface vulnerabilities and procedures," according to the Senate report. Also, a detailed software audit was undertaken by Teledyne Brown Engineering.

In addition, the report said:

- Norad has added computer programs that trace a message through the entire message preparation phase to ensure the transmission accurately reflects what is input into the message system.
- Norad has added a display in its command post to show what is being transmitted to other command posts. At the time of the June incident, Norad "had no way of knowing what was being transmitted to other command posts," the report said.
- The message format has been changed so that it indicates the status of the communications system rather than numbers of missiles. Now if Norad sends a message indicating numbers of missiles, an alert in the Norad command post will be triggered indicating transmission of a "real message."
- Whereas the SAC duty officer had previously been instructed to alert bomber and tanker ground forces upon any indication of missile attack, now, under most conditions, he will first compare warning data from the sensors to that data being transmitted over the communications system.

A team of computer and telecommunications specialists from both government and private industry has been working with Norad to identify weaknesses in the 427M system and recommend improvements.

As part of its findings, the Senate report said the system should be exempted from federal DP telecommunications procurement procedures in order to facilitate equipment upgrades.

The two senators concluded "the Department of Defense has taken what appear to be appropriate steps to examine the technical aspects of the system to try to reduce the room for error" in the system's "vast array of computers and communications equipment."

"There is no guarantee that false alerts will not happen in the future. They will occur, and we must rely on the collective judgment of the people manning the system to recognize and deal with false alarms," the report added.

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CAMBRIDGE, Mass. — The subject of people and their relationships to DP will be the topic of Data Training Expo 80, to be held here Dec. 8-10.

The conference will attempt to show how an enhanced human relationship with computers can increase productivity and lead to less turnover. It was also designed to help nontechnical users familiarize themselves with computers and guide them in developing elemental systems.

The full, three-day registration fee is $300 before Nov. 14 and $340 after.

The one-day fee is $120 before Nov. 14 and $135 after, the sponsor, Northeast Training News, said from 176 Federal St., Boston, Mass. 02110.

Compeda Show to Feature CAD, Engineering Systems

ANAHEIM, Calif. — Compeda, Inc. will be showcasing its latest in computer-aided design (CAD) and engineering systems at the Design Engineering Show, to be held here on Dec. 9-11.

The company is featuring systems for mechanical and industrial engineering, the process industries and the electronics industry at its booth, including the Dragon, Sammie, Mosaic, Remus, Gaelic and Splice programs, a spokesman noted.

Further information about the Compeda display is available from Ray Kush at Compeda, Suite 260, 2180 Sandhill Road, Menlo Park, Calif. 94025.

Caused by False Radar Data

Senate Discloses Two More False Norad Alerts

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Senate Armed Services Committee has released information on two previously unpublicized false alerts generated during the last year by the U.S. missile attack warning system.

The two incidents, one in October 1979, the other in March were caused by false radar data rather than by computer foul-ups, such as those that caused two other false alerts during 1979 and 1980.

Mention of the two incidents turned up in an unclassified version of a report prepared by Senators Gray Hart (D.-Colo.) and Barry Goldwater (R.-Ariz.) at the request of the committee's chairman, Sen. John Stennis (D.-Miss.).

Investigation Triggered

The investigation was requested after a computer failure in June at the North American Aerospace Defense Command (Norad) in Colorado generated a false alert and caused U.S. bombers to move to an advanced stage of readiness [CW, June 16, June 23].

The June 3 alert, quickly recognized as false, was blamed on the failure of an integrated circuit in a communications multiplexer that is part of the worldwide radar, computer and communications system that links sensing stations and various U.S. defense command posts.

The June occurance followed November 1979 false alert of a "mass raid" on the U.S. caused, in the words of the Senate report, by "the inadvertant introduction of simulated data into the Norad computer system" [CW, Nov. 19, 1979].

Besides the two computer-related alerts, Hart and Goldwater reported a "false launch and impact report" was generated Oct. 3, 1979 when a radar system designed to detect submarine-launched missiles detected and incorrectly interpreted a piece of space debris, a rocket body, burning up as it reentered the earth's atmosphere.

Additionally, in March of this year, "an unusal threat fan" was detected by U.S. radar when the Soviet Union launched four submarine missiles as part of a troop training exercise in the Kuril Islands.

Three-Part Response

These four incidents were the only times during the last two years that high-ranking defense officials convened what is known as a "threat assessment conference," the second stage of a three-part response procedure for threats perceived by the warning sensors.

The first step in evaluating sensor data that indicates a possible threat, the "missile display conference," is at the duty officer level and is terminated when the Norad commander decides whether there is a real threat of attack. In 1979 there were 78 of these conferences, in 1980 there were 69. In all but the four instances mentioned above, the data was recognized as false during initial human evaluation.

The third and final possible action, other than counterattack, in response to a perceived attack threat is to convene a "missile attack conference," which brings in all senior defense personnel including the President. No such conference has ever been convened, the Senate report noted.

The report said "it is not surprising" that periodic erroneous data is generated by the combination of satellite and ground-based radars, computers and communications systems.

Complex Task

"The missile tactical warning and threat assessment task is a very complex and difficult technical task [that] will produce some ambiguities and uncertainties," the report said, adding that the system's ultimate reliance on "trained personnel" to evaluate data adequately prevents any unwarranted responses.

Sending bomber crew into advanced readiness to ensure survivability while attack threat data is being reviewed is "a prudent step" and is "quite appropriate and necessary", the report said, given the short time — less than 30 minutes — it would take for a Soviet missile to reach the U.S.

Because the warning system must be sensitive enough to not miss any missile launches it is hard to screen out all "other physical phenomenon both in the atmosphere and on the earth's surface" that can be perceived as possible missile launches by sensing equipment.

Routine Cases

In the last two years there have been 3,703 "routine" cases of the sensors picking up some physical phenomenon or instances of sensors being reconfigured that necessitated special evaluation of incoming data, according to the report.

The report also noted "the possibility that a computer or a piece of communications equipment will transmit a false piece of information. This happens with some frequency," the committee investigation found — perhaps two or three times a year, although prior to the June 3 incidents records were not kept of such incidents.

Given the complexity of the system, the number of false threat data is not surprising or disturbing, the report said. And because in only four cases in the last two years was the information not immediately recognized as false, the two senators concluded the system is working reasonably well.

Improvement Recommendations

Their report did contain recommendations for improving the system, however. Noting management responsibility for the missile warning system is divided among four Air Force commands, the report suggested the Secretary of Defense consider consolidating "essential resource management" under one commander.

A "second major concern" voiced in the report was about the process for acquiring DP equipment for the system. Because of the complicated federal regulations on DP and communications procurements, a "typical system upgrade" for "strategic and tactical warning" can take from five to seven years.

Upgrades under current planning are expected to take even longer, the report added.

As a result, "in most cases, the [ADP] equipment is functionally obsolete prior to its operational use," the report said. Because of the critical importance of the warning system, it was recommended the procurements should be exempted from normal federal acquisition procedures.

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Technicians Seen Moving to Top Management

By Jeffry Beeler
CW West Coast Bureau

SAN DIEGO — Information systems managers will find growing opportunities during the 1980s to transcend their narrow technical specialties and advance to positions of top general management, a Rockwell International Corp. executive predicted here recently.

The potential for career advancement will prove particularly great in large companies, where a serious communications gap typically separates management information systems (MIS) professionals from senior corporate management, according to Kent Black, president of Rockwell's Electronic Systems Group.

Mutual misunderstanding still characterizes the relationship between most corporate officers and their computing-room subordinates, Black said at an International Data Corp. executive conference on "Improving Information Processing Profitability and Productivity During the 1980s."

During the next few years, however, the gulf between technical and nontechnical management is expected to slowly narrow as information systems managers increase their mastery of general business and senior executives expand their knowledge of computing. The acquisition of increased business expertise will open the way for MIS managers to advance up the corporate ladder and possibly even work their way into their companies' highest management echelons, Black said.

Information Explosion

Speaking on the subject of what top management expects from computing during the 1980s, Black voiced concern that the current information explosion is complicating the task of distinguishing pertinent facts from irrelevancies.

"Hardly anyone doubts that computing has the potential for revolutionizing the way we conduct business," he said. "But it also has the potential for drowning important information in a sea of useless data."

Main Goal

An information processing department's main professional goal in life should be to try to design and implement integrated systems that supply data in exactly the quantity and form that its users need.

Today's hardware and software systems can easily generate an "iceberg of information," but of what possible value is such a huge mass of data when all a user typically wants is a "bucket of ice"? Black asked.

"Whenever I think about the volume of meaningless data that users are sometimes inundated with," he added, "I always recall John Jacob Astor's words when he first learned the Titanic had struck an iceberg: "I know I ordered ice, but this is ridiculous.'"

Like Rabbits

Within his own company, Black expressed concern about the uncontrolled proliferation of small computers and about the Rockwell computing department's regular failure to meet its reporting deadlines.

"It's not at all uncommon for us to get our monthly management reports two weeks after the end of the latest accounting period," he said.

In the future, Black expects to see his company's information processing expenditures grow in absolute dollars but steadily decline as a percentage of total sales.

He also looks forward to the day when his own office, as well as those of many other Rockwell executives, will be equipped with an on-line, desktop terminal that will allow him to query his firm's data base, perform a wide range of sales forecasts, do financial modeling and generate assorted management reports — all in four-color graphics.

Black expects to implement the system gradually and have a final version up and running by 1985.

Comnet to Focus On Bell Rebuild

HOUSTON, Texas — The questions relating to AT&T's major restructuring will be a main focal point of the Comnet '81 conference, to be held here Jan. 13-15.

On hand to chair the three-day event will be former Federal Communications Commission (FCC) Chairman Richard E. Wiley, now a Washington regulatory attorney. Wiley feels that Bell should not be permitted to dictate government policy, but rather should adjust its structure to meet legislative regulations devised with the best public interest.

A key session at the upcoming conference will include top industry spokesman in a debate on how the new Bell subsidiary will affect the telecommunications, and the FCC's role therein.

More information on the Comnet '81 agenda is available from organizers at Communications Networks, Management Office, 375 Cochituate Road, Framingham, Mass. 01701.

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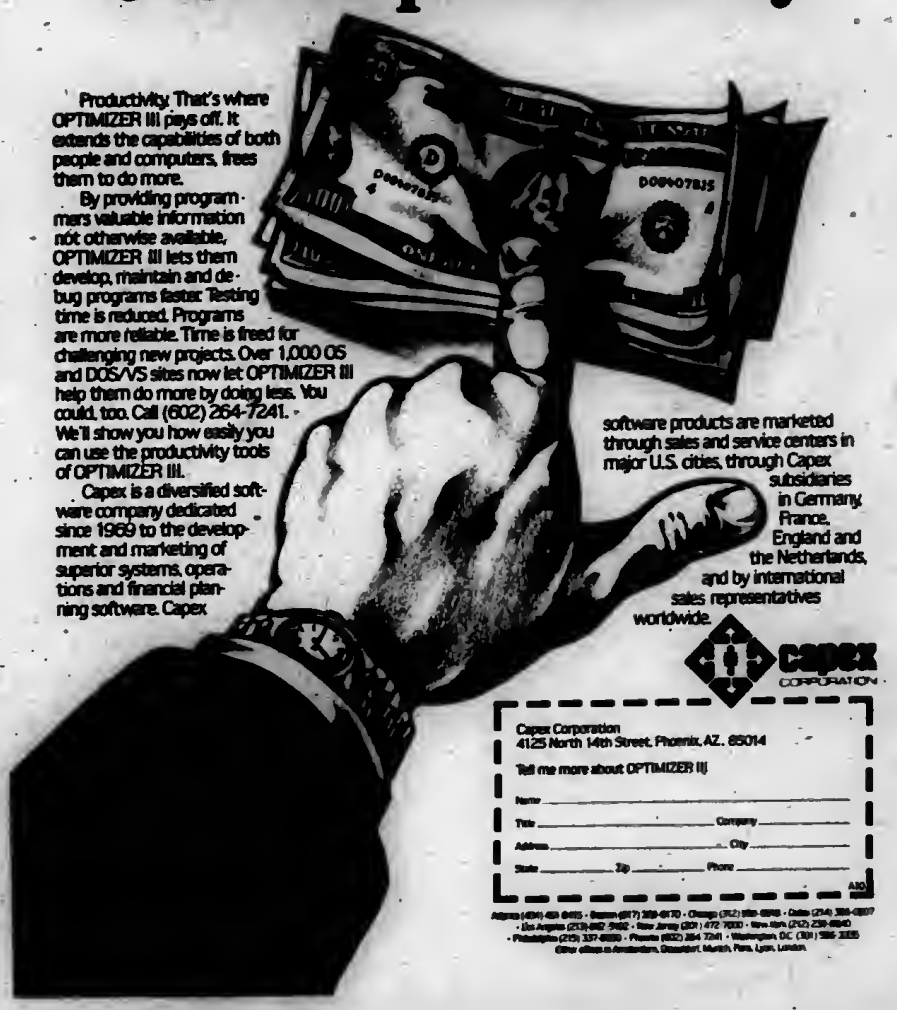

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A10

Diebold Sees DP Making or Breaking Businesses

By Ann Dooley
CW Staff

PHILADELPHIA — Information management will either make or break businesses in the 1980s, John Diebold told a group of Data Processing Management Association (DPMA) members here recently.

The advent of information technology will affect an organization at every level, as individuals who never had to deal with high technology before suddenly find it an integral part of their jobs, Diebold stated as he accepted the Distinguished Information Sciences award presented to him by DPMA.

While businesses are demanding greater amounts of information, they must also realize that they need less, Diebold said, noting that business must become more selective in its drive for information. More important than mechanisms to gather information will be the ability to create mechanisms to use it effectively, he noted.

Proper Management

Calling this ability the single most important contribution of the new information technology, Diebold said that executives will be able to increase productivity and keep on top of fast-changing events only if they can manage information properly.

Over the past decade, the speed of handling transactions had increased tenfold every four years, while costs of handling has declined by a factor of 10 every four years, he told the audience.

Few realize the extent of these lower costs, he said. Between 1960 and 1970, costs decreased by 99.9% — equivalent to a $10,000 car being reduced to just $10, Diebold stated.

This cost reduction has helped bring technology to users and with spiraling labor costs and a continuing decline in white-collar productivity, users cannot afford not to use the technology, he asserted.

Information will become a key factor in an organization's ability to respond to its various constituencies — most of whom have never been recognized by management before, Diebold said. Being sensitive to groups such as consumers, stockholders, the government and employees can lead to changes in corporate goals and objectives, Diebold charged. Organizations will have to be responsive to many factors and maintaining a profit is no longer as straightforward as it once was.

Diebold told the DPMA audience that less than 15% of the information in a typical organization currently is automated. And the small portion that is automated consists of general business-type applications. Those decision makers who rely most on information often have little technical support and are reluctant about accepting it, Diebold continued.

Who Will Benefit?

Priorities as to who will benefit from automation have also occurred. In the 1970s, expenditures averaged $25,000 per blue-collar worker, compared with $2,000 for each white-collar worker, he stated.

The productivity growth rates of the two groups illustrated the emphasis, he noted, adding that white-collar productivity will continue to lag unless cost-effective tools are begun to be used by management.

Information is just as much a corporate resource as its work force, its capital or its plants and equipment, and corporations must recognize this, Diebold said. Efficient management of information will be accomplished by a new way of thinking about information that Diebold called information resource management (IBM) — meaning that it will have to be managed the same way that other corporate resources are.

To create a successful information policy, corporations need to place a value on information, maintain an accurate inventory of the information available and establish guidelines for use of the information, Diebold said.

This understanding of the role of information will require a massive educational effort, both to sell management on the advantages of the new technology and to train the millions of white-collar workers to use the technology effectively, according to Diebold.

People must be educated that information technology will not replace people or stifle their creativity but will simply make more quality information more readily available to them, he said.

Diebold challenged the management association that if may want to institute the new information technology they must rethink their own attitudes and realize that the new environment is a departure from the old tried-and-true methods.

Diebold closed by warning the attendees that information management can not be "a "one-shot" process but will need constant upgrading on the technical level.

Diebold Receives DPMA Award

PHILADELPHIA — John Diebold, internationally acclaimed expert on information management, was presented the 1980 distinguished Information Sciences award by the Data Processing Management Association (DPMA) at its annual international conference here recently.

Nearly 4,000 DPMA members attended the conference, which was designed to entertain and inform its international constituency.

Diebold, chairman and founder of the Diebold Groups, Inc., a management consulting firm with offices in New York, Frankfurt, West Germany and other cities, was honored for his achievements in the field of automation.

The author of several books and publications relating to the growth of computer and communications technology all resulting in the burgeoning information field, Diebold also serves as management consultant to some of the largest U.S. and foreign corporations regarding their information policies.

Given in recognition of outstanding contribution to the DP field, the award was previously known as the "DPMA Man-of-the-Year" award, and was presented last year to Ruth Davis for her work in computers in the national defense.

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COMPUTERWORLD
Page 24
EDITORIAL
DISASTER PLANNING
The recent flooding of the U.S. Census Bureau computer center where two mainframes were irreparably damaged (CW, Oct. 15) should serve as a warning to all DP managers.
The flooding was caused by an accidental discharge of the center's water sprinkler system, and in [illegible] two units permanently [illegible] action.

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To Hike DP Productivity

Employee Relations Touted as No. 1 Priority

By Ann Dooley
CW Staff

PHILADELPHIA — Employee relations should be the No. 1 priority of a DP manager, according to two personnel experts who told managers at the recent Data Processing Management Association (DPMA) annual meeting here about two very different methods of increasing motivation and productivity.

The need to motivate people increases as people costs rise, Leon Rizio, manager of management consulting services for Coopers & Lybrand, Inc., Los Angeles, maintained.

Although most managers came up through the ranks themselves, the new concepts and technology that are taking place in the industry mean that a manager is directing people in functions with which he never had experience, he noted. And this means more stresses in communications and working relations.

Although employees become more productive over time, their job satisfaction usually decreases over a corresponding time frame and that's where good management techniques are essential, he said.

Rizio told the managers that they must recognize the differences between users and the computer staff. They have different social needs, he stated, adding that while computer personnel tend to be the highest motivated of any group, they do not interact well with people.

Performance Objectives

Managers should recognize this and develop performance objectives that are based on individual performance tasks. These should be mutually agreed to and should undergo periodic review, Rizio noted.

Managers should treat their subordinates as professionals and be aware of their strengths and weaknesses and be ready to educate and develop them, Rizio said.

People are key resources in any department, but most managers do not know "what makes them tick," Dr. John Demidovich, professor of management at the Air Force Institute of Technology at Wright Patterson Air Force Base, Ohio, said.

Productivity is taking a dive and managers must begin to turn that around, he counseled. There can be a systematic approach to problem solving that must be recognized and implemented.

Objectives should be identified, data gathered, solutions listed and tested and then the best solution implemented in every project, Demidovich said.

Group Interaction

But unlike Rizio, Demidovich believed that better quality can be achieved through more group interaction.

Demidovich suggested a program of quality control circles that are composed of small groups of employees who perform similar work and gather on a regular basis to identify, plan and implement work-related proposals.

This kind of people-building program needs to be voluntary and receive management support in order to be effective, Demidovich cautioned. But the whole concept is to push problem solving down to the bottom where the people are doing the work and involve them in the decision making.

In companies that have used these techniques properly, they have found improvement in communications, the quality of work, a decrease in absenteeism and production delays and a boost in morale, cooperation and flexibility, Demidovich claimed.

While this method requires work by both management and employees, Demidovich claimed that motivation increases, which results in higher productivity.

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Bell, Dartmouth Honor Computer Pioneer Stibitz

HANOVER, N.H. — George R. Stibitz, professor of physiology emeritus of Dartmouth Medical School and contributing inventor of the computer revolution, has been honored jointly by Dartmouth College and Bell Laboratories.

A bronze plaque from Bell acknowledging Dr. Stibitz's contribution to computing in the late 1930s was presented to Dartmouth Provost Leonard Rieser.

The plaque will be placed in McNutt Hall at Dartmouth, where Dr. Stibitz surprised and confounded some 300 members of the nation's leading mathematicians with his electrical digital computing demonstration on Sept. 9, 1940.

Stibitz has worked as a mathematician for Bell Labs, researcher and private consultant, professor of physiology, inventor and computing pioneer. He has been the recipient of both the American Federation of Information Processing Societies' Harry Goode Memorial Award and the Institute of Electrical and Electronic Engineers' Emanuel R. Piore Award.

Bell vice-president Seth Washburn, Dartmouth Class of 43, presented the Bell plaque to his alma mater and noted Dr. Stibitz's 40-year old demonstration as siring a revolution and paving the way for today's computing age.

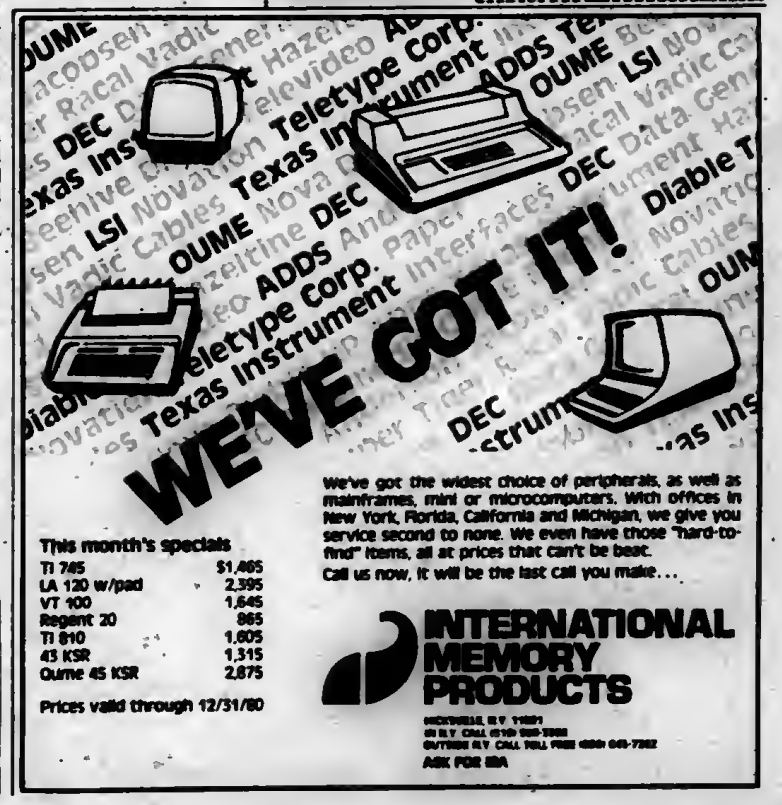
HISSG Seminar to Address Hospital Systems Factors

SAN DIEGO — A three-day seminar on "Cost Containment, Planning and Implementing Computer Systems" will be presented by the Hospital Information Systems Sharing Group (HISSG) at Vacation Village here Jan. 20-23.

The keynote speaker at the event will be Sam Tibbitts, president of the Lutheran Hospitals Society, chairman of the board at Pacific Health Resources, Inc. and past-president of the American Hospital Association.

Other speakers will include Addison Bennett of Pacific Health Resources, Inc., O. George Kennedy of The Kennedy Group, Inc. and John Kravolec of Ernst & Whinney, Inc.'s Management Services Division.

Additional information on the association and the seminar is available from W.V. Rosqvist at HISSG, 2415 South 2300 West, Salt Lake City, Utah 84119.



Among White-Collar Workers

Automation Held Solution to Productivity

By Marguerite Zientara
CW Staff

NASHVILLE, Tenn. — Reorganization and automation are the solutions to the problem of declining productivity in the U.S., where the productivity rating has dived from fourth to 10th internationally in the past seven years.

That was the theory espoused here recently by Richard Wiersba, associate professor of computer information sciences at Bentley College in Waltham, Mass., in a presentation entitled "Improving White-Collar Productivity."

Speaking at ACM '80, the conference of the Association for Computing Machinery (ACM), Wiersba first cited the oft-repeated "simple definition" of productivity as "basic output divided by basic input."

Noting that the term "white-collar" includes secretarial and clerical workers as well as managerial and professional, Wiersba cited survey results showing that one-fourth to one-third of all office labor costs go toward secretarial and clerical work.

"In the clerical area the introduction of word processing (WP) technology is not the whole solution to low productivity," Wiersba said. While the technology is solving some problems, it carries problems of its own.

Among those problems are that "production/WP centers" often break jobs down to their lowest level of repetitive, boring tasks and consequently convert white-collar workers to a blue-collar concept, Wiersba said.

Education Solution

While technology may provide some temporary solutions to productivity problems, it is education, in the long run, that actually offers solutions, he claimed.

Since the communication and math skills of all white-collar workers have deteriorated, according to Wiersba, the most effective workers will need better communication skills, a better idea of their tasks, objectives and resources and higher levels of computer literacy.

"The technology should magnify human capabilities, not replace them," Wiersba noted.

In the managerial and professional area, Wiersba noted that 60% to 75% of office labor and support money goes toward management where there exists a great potential for increased productivity benefits.

The fundamental problem in the managerial area, in terms of productivity, is the amount of time spent on communication and information retrieval, Wiersba said.

He added that the communication problem is a "people, language, sociological, emotional, psychological and business problem."

Not necessarily quantitative, the problem must be examined qualitatively as well, Wiersba said. The specific productivity problem should be defined, and then a search begun for the appropriate system to solve the problem.

An increased acceptance of the technology by managers will be necessary, including expertise in its direct use instead of delegating it to someone else. Keyboard skills and computer literacy will be needed in order to participate in the choice of equipment instead of relying on recommendations.

Reorganized Attitudes

Besides technology and increased computer literacy, management attitudes need reorganizing, according to Charles Wortz, a graduate student and teaching assistant in the computer science department at Vanderbilt University here.

"Managers often assume things are working right, when things aren't working right," Wortz noted, advising that reciprocal communication is needed between management and labor. "Communication is often downward, but not back-and-forth," he observed.

Furthermore, Wortz suggested, "When you try to automate, instead of going for a grand design, put in a little prototype system first — something cheap to try the system out so you can modify it and get feedback from the users."

Identify Personnel

On the personnel side, he noted, "there are always clerical workers who really don't want to make decisions; identify them and let them do the drudge work.

"Higher level workers usually want open-ended jobs, so find them and try to match the people to the jobs," Wortz said. "Again, you need communication to identify different types of workers." As for system designers, they should know what the user needs to do a job right. "Try to talk to the users, get a feeling for the real problems and give the client a prototype system to try out."

Wrapping up the presentations was Ron Oliver, a systems engineer for the Mitre Corp. in Colorado Springs, Colo. "While [the U.S. is] very successful in automating industrial applications in business applications such as payroll, we're way behind, and we've been doing it the longest," Oliver said.

Think Small

Why are we so unsuccessful in this area? "We make the fundamental mistake of patterning our technological solutions after the solutions of 15 or 20 years ago [that ran on] large mainframes," he said.

Many solutions can be implemented — and more easily — on small computers, he added.

Oliver cited a DP vendor who advertised having taken 500 man-years to develop a system. "During those seven years, the technology changed twice," he noted, adding, "We can't afford the time it takes to develop intricate do-everything systems."

Oliver advised managers to stop "increasing their empires by hiring technical experts, and instead restrain themselves." In addition, managers should encourage employees who want to expand their knowledge and experience to learn about computers. However, he counseled, "don't require anyone to be a computer scientist," but rather offer him an opportunity for career growth. In addition, Oliver recommended the use of high expertise for short periods of time, "similar to what lawyers and accountants offer businesses."

Such occasional consulting services — used perhaps one day a month for a year — are "desperately needed," he said.

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Ifip Conducting Study On Design Methodologies

GRONINGEN, Netherlands — The International Federation for Information Processing (Ifip) is conducting a comparative review study on advanced methodologies now being proposed for information processing system design.

Methodologies will be used for presentation at an Ifip-sponsored Working Conference in May 1982.

Groups or individuals who have developed a methodology for information system design are invited to submit design specification for a standard test case by Feb. 28.

Participation is encouraged from both practitioners and researchers alike. Details regarding the standard test case and the requirements for submission can be obtained from H.G. Sol, Cris Conference Secretariat, Information Systems Research Group, University of Groningen, P.O. Box 800, 9700 AV Groningen, Netherlands.

NBS Adopts Ansi Fortran, Basic as Standards

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The National Bureau of Standards (NBS) has adopted the American National Standards Institute (Ansi) versions of Fortran and Minimal Basic as mandatory federal standards.

Under the new standards, all Fortran and Basic applications developed or acquired by federal agencies after the Sept. 4, 1980 effective date must comply with the specifications contained in Ansi X3.9-1978 Fortran and Ansi X3.60-1978 Minimal Basic, respectively.

Adoption of the standards follows consideration of comments on the standards solicited by NBS in July.

Retailers' Meet On Profitability Set for Jan. 11

NEW YORK CITY — "Strategies for Growth and Profitability" is the theme of the National Retail Merchants Association (NRMA) 70th annual convention, which is scheduled to take place here on Jan. 11-14. Also featured at the NRMA-sponsored event will be a retailers' business and equipment exposition.

Products and services to enhance productivity, increase efficiency and control expenses will be showcased at the event.

In addition to some 70 general sessions of interest to retailers, private consultations with field experts can be arranged to help retailers solve specific problems.

Awards will be presented for retail excellence, and outstanding independent and international retailers will be honored as well.

Further information on the NRMA event can be obtained from their headquarters at 100 W. 31st St., New York, N.Y. 10001.

Washington Update

Detroit Tech Center Gets Commerce Grant

WASHINGTON, D.C. — The Department of Commerce has awarded $1 million to the Detroit Cooperative Generic Technology Center (Cogent) to create a research facility for computer integrated manufacturing.

Established under the recently passed Technology Innovation Act of 1980, the Cogent facility is also eligible for a $5 million grant from Commerce's Economic Development Administration, the department said.

The funds, to be made available during fiscal 1981, will be matched by an estimated $6 million in private support. The generic technology centers were called for in the innovation act to enhance industry-government cooperation in bolstering U.S. competitive and technological strength.

DOE Seeks Proposals On Energy-Wise Uses

WASHINGTON, D.C. — The Department of Energy (DOE) recently requested project proposals to demonstrate energy-efficient applications of industrial computers.

DOE said it will accept proposals from "all technically qualified organizations for research, development and demonstration work." The department said it might provide financial assistance for projects offering "unique energy-saving potential."

The proposals should be for industrial, in-plant demonstrations of computer technology that will save energy and be cost-effective, DOE said.

Proposals will be accepted through Jan. 22. Information on submitting proposals and on technical questions is available from the Office of Industrial Programs, Mail Station 2H-085, Department of Energy, Washington, D.C. 20585.

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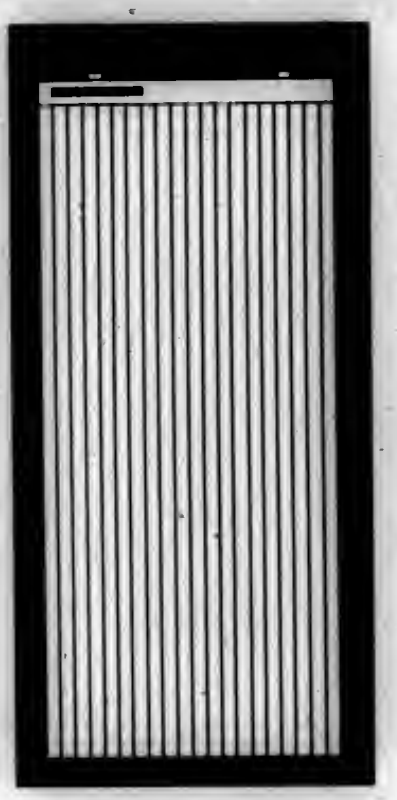

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'Woeful Litany of Problems'

House Unit Calls INS System 'Ironic Disgrace'

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — It is an "ironic disgrace," a congressional committee said recently, that the U.S., a land of computers and efficiency, greets foreign visitors and immigrants through the mismanaged, undersutomated and inefficient Immigration and Naturalization Service (INS).

Detailing a "woeful litany of problems" of INS recordkeeping, the House Subcommittee on Government Information and Individual Rights released the results of its year and a half investigation into failed INS attempts to automate its overburdened record-keeping practices.

Government reliance on "teaming" INS record systems has grown dramatically in recent years with no corresponding increase in INS staffing. The agency's recordkeeping, the subcommittee said, " has strained under this increasingly heavy load, buckled and finally fallen down.

"As a result, aliens are forced to wait years for the service to process their papers, if indeed the papers are not lost. The inconvenience and hardship are an ironic disgrace to a country whose reputation for being able to get the job done undoubtedly attracted many of the aliens here in the first place.

Discord Threatens

"More critically," the report continued, "the clerical collapse threatens discord in a country that relies heavily on knowing who is within its borders in order to maintain economic and social well-being."

Commenting on the report, Subcommittee Chairman Rep. Richardson Preyer (D-N.C.) said he was particularly disturbed about the lack of security controls over immigration files. He noted a number of INS employees have recently come under investigation for allegedly selling or altering immigration documents.

"We found that security personnel at INS had never run test raids on its paper and computer records," Preyer said. "They had also failed to test means of spotting forged or altered entries on the files." These failures are distressing because of the "large black market in forged documents," Preyer said.

Justice Blamed

The subcommittee blamed inadequate oversight by the INS parent agency, the Justice Department, for letting the Service drift into its present situation and criticized INS top management for failing to properly introduce computerization into agency record-keeping operations.

"INS waited until its problems were critical before moving to automate and then proceeded precipitously and improperly," the report said. INS is consequently threatened with "an expensive quagmire of unwarranted and unnecessary computer equipment."

Efforts by then INS Commissioner, Leonel Castillo to automate several INS district offices in 1977 ignored federal procurement regulations and legislation as well as Office of Management and Budget guidelines, the subcommittee found, terming INS contracting procedures "deplorable."

At the request of the subcommittee, the General Services Administration (GSA), which oversees federal DP procurements, halted the INS automation efforts last year while the House panel continued its investigation [CW, Aug. 6, 1979].

In its report, the subcommittee said the hold on computer procurements will continue while INS draws up a "suitable" DP plan, assisted by the subcommittee, GSA and the General Accounting Office.

"In the meantime," the subcommittee said, it has "insisted that INS improve its manual handling of records so that the future DP system will not be built on a foundation of missing documents and misplaced files."

Recommending a series of changes for INS planning, contracting, procurement and record-keeping practices, the subcommittee also said Congress and the Administration should consider the impact of proposed legislation on INS' record-keeping burden.

'The clerical collapse threatens discord in a country that relies heavily on knowing who is within its borders in order to maintain economic and social well-being.'

Solving its record-keeping problems is particularly important to INS because, the subcommittee noted, it is one of the few agencies, along with the Internal Revenue Service and the Social Security Administration, "that is totally dependent on the adequacy and accuracy of its records to accomplish its statutory mission and to survive in the bureaucratic swamps."

After surveying the "woeful" findings of its investigation, the subcommittee expressed some optimism about INS record-keeping practices, saying the study "discloses hopeful signs that automation will provide some solutions."

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Managers on the Move

Eugene A. Paulsen

EUGENE A. PAULSEN has been appointed senior vice-president of DP at Bowery Savings Bank in New York. He will be responsible for direct supervision of electronic DP functions, including operations, control systems and programming.

Paulsen began his career at Burroughs Corp. where he held various positions, including U.S. product manager for DP and general manager of marketing for such clients as General Motors Corp., Ford Corp., Chrysler Corp. and AT&T. While at the bank division of Burroughs, he became involved in the development and implementation of the first bank automative system.

Paulsen graduated from Siena College, Loutonville, N.Y., with a B.A. in business administration.

• • •

PAUL JOTWANI has been appointed DP director for Ancilla Domini Health Services, Inc., Des Plaines, Ill. He formerly served as associate director for the corporate headquarters, which serves hospitals in Illinois and Indiana.

During his eight years with Ancilla Domini, Jotwani has helped develop a patient information system, directed development of a distributed on-line support for materials management and accounts payable systems and of distributed data entry support for all financial systems.

Jotwani holds a B.S. in mechanical engineering from Sardor Patel University, India; an M.S. in industrial engineering and operations research from the University of California, Berkeley; and an M.B.A. in financial management from Loyola University, Chicago.

• • •

JOHN H. TALLEY has been appointed assistant director of production and technical services in the corporate DP department at Connecticut General Life Insurance Co., Hartford, Conn.

He joined the company in 1978 as manager of technical support in the DP section. In his new position, he will be responsible for the development, performance measurement and quality assurance of the data center, which is an IBM-Univac environment.

Talley previously was data base manager with CBS in New York and a systems analyst with Consolidated Edison, also in New York.

Talley is a graduate of New York City Community College and holds an A.A. in mechanical technology.

• • •

Pneumo Corp. has appointed JOHN F. MATUSCAK president of Pneumo Services, a wholly owned subsidiary which provides electronic DP services to its parent company.

Matuscak was previously employed by McDonnell Automation Co. as manager of financial systems planning and was a consultant with Ebasco Services. He also served as chief of operations at the National City Bank of Cleveland.

• • •

JOEL N. SOBO has been promoted to vice-president of computer systems in the Services Department of Prudential Reinsurance Co., Newark, N.J. He will be responsible for organization, operations and

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Managers on the Move

quality assurance.

Sobo joined the parent company, Prudential Insurance, in 1963 and served in the accounting, personnel and computer areas of Newark, N.J. and Boston prior to transferring to Prudential Reinsurance in 1978. He was director of computer systems prior to his recent promotion.

Sobo graduated from Cornell University with a B.S. degree in business administration.

WILLIAM L. HARRISON has been elected vice-president and deputy director of the DP department at the Hartford Insurance Group in Hartford, Conn. He will continue to be responsible for Hartford's DP systems unit.

Since joining the company in 1969, Harrison has held several positions in DP management and was elected assistant vice-president in 1971. He was previously employed by RCA Corp. and Prudential Insurance Co.

Harrison graduated from the University of Rhode Island with a B.S. degree in economics and earned an M.B.A. in business administration from Rutgers University.

•••

G. LEE MYERS III has been named director of systems development in the information services department of the American Automobile Association, Washington, D.C.

Myers was formerly with Univac, where he was branch manager, finance and control, for federal systems operations. Prior to that, he was group manager of Univac's worldwide benchmark and demonstration activity for large-scale systems, systems manager for all 1100 systems in the federal government and project manager for one of Univac's large government computer installations.

•••

JOHN F. COULEUR has joined A.B. Dick Co. as director of computer development at the Phoenix site.

Couleur was recently a consultant to the director of engineering for Honeywell Information Systems. Earlier, he served as vice-president for computer development at University Computing Co., Dallas, and manager of computer engineering at General Electric in Phoenix.

Couleur received a B.S. in electrical engineering from Southern Methodist University in Dallas.

Couleur holds more than 40 patents in the computer industry.

•••

RICHARD E. BIRKENBEUEL has been named director of corporate management information services MIS for AM International, Inc. He will be responsible for all corporate data center activities, including software support, corporate-wide hardware and software planning and voice and data telecommunications.

Birkenbeuel joins AM from Kraft, Inc., where he held various MIS management positions. He held management and technical posts with Jones and Laughlin Steel Co. and the Sunstrand Corp.

He received B.S. and M.S. degrees in mathematics from Illinois State University.

•••

RICHARD V. JASINSKI has been named vice-president of data services and DAVID RIGBY has been promoted to manager of DP at the computer marketing services division of Rumrill-Hoyt, Inc., Rochester, N.Y.

Jasinski joined computer marketing last year as supervisor of DP. Prior to that he was employed by the city of Rochester, N.Y. as a computer system analyst and programmer supervisor. Before that he was analyst/project leader with Griffin Computer Services, Inc. of Rochester.

He received his associates degree in applied science from Alfred State College, Alfred, N.Y.

Rigby was previously assistant of DP at Computer Marketing. Prior to joining the company he also was employed by the city of Rochester as a computer programmer/analyst, and senior programmer, administration at Monroe Community College, Rochester.

He holds a B.S. in applied science from Monroe Community College.

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Oklahoma City Controversy

Automated Gas-Up Works — Three Years Later

By Bruce Hoard
CW Staff

OKLAHOMA CITY, Okla. — A computer system designed to regulate the flow of gasoline to city vehicles here is finally getting off the ground after three-and-a-half years of controversy.

Although it functioned smoothly for about a year after its 1975 installation, the field monitoring system experienced a continuous rash of software and hardware difficulties that lasted until the middle of last month, according to Steve Eubanks, Oklahoma City industrial engineer.

Nine remote fuel stations throughout the city are tied to a Data General Corp. Nova II minicomputer downtown by a dedicated data line. Software for the system was provided by Engineered Systems, Inc. (ESI).

As originally envisioned, employees were to stop at a fuel site and insert their personal and vehicle identity cards in a terminal. The terminal was to then unlock the gas pump, measure the amount of fuel pumped and charge the appropriate city agency for the transaction.

The employee pumping the gas was also supposed to enter the first five digits on the vehicle's odometer, starting from the right and moving left.

Going Wrong

After the one-year grace period, things started going wrong. "Our major problems throughout have been with the software," according to Eubanks, who added that the Nova II also experienced memory board problems when it was first purchased.

ESI did not agree that software was at the heart of the system's hang-ups and blamed the Nova II and the dedicated line leading to it, Eubanks said. After considerable disagreement, "the whole thing turned into a finger-pointing match," he claimed.

As he described it, the system would go down about twice weekly after "seeing information it didn't understand."

By January 1977, things were so bad the system was taken out of service and employees put on an honor system with the gasoline.

At the rate it was abused, the city figured its losses at about $100,000 a year.

After periodic feuding, the city signed another contract with ESI last fall and the firm attempted to straighten things out. Little was accomplished, according to Eubanks, who joined the city early this year.

Machine Language

One of the biggest problems revolved around the fact the software was written in machine language, rendering it unintelligible to experts on the city's DP staff, he said.

When it appeared another impasse had been reached with ESI, Eubanks called in a consultant from American Rail Testing, Inc., who made rapid headway with the system, he said.

Within two months it was operating better than any time in the past three years.

Ask Ramtek.

Now, Ramtek offers the first integrated system for MIS graphics users.

Ramtek's new 6214 color graphic computer frees you from buying each of your display elements from a different supplier. Ramtek has put it all together in a true stand-alone color graphics system complete with processor, monitor, console, mass memory storage and UCSD Pascal.™ And full Ramtek support with field service, training and documentation.

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The 6214 gives you high resolution—640 x 512 refresh memory for smooth, curved plots. Choose 16 colors from a palette of 64, with no annoying image flicker.

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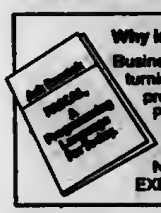
For MIS, computer-aided design or any application that requires high resolution, high-performance color graphics, look into Ramtek's 6214 colorgraphic computer. To get more information, write: Ramtek, 2211 Lawson Lane, Santa Clara, CA 95050.



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Infotech Event To Treat Banking, Automation Plans

LONDON — "Automated Banking — The Next Five Years" is the name of Infotech Ltd.'s state-of-the-art conference slated to take place here Dec. 1-3. The event is aimed at senior management in banking and finance who are responsible for strategic planning of automation.

Pactel International S.A. President Ken Hughes will chair the conference, which will analyze the impact of technological development on banking and related services. Topics will include automation implementation, network technology, electronic funds transfer, relative legal issues and interbank relationships.

Further information on the event can be obtained from Bob Muller, Infotech Ltd., Nicholson House, Maidenhead, Berkshire, UK.

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A major announcement. In January this publication will feature a major announcement on DELTAK's plans for its CBI Library.

For more information contact
Dr. John Hirschbuhl 312.920.0700.

DELTAK

Father Michael

Monks Leave Farm to Open Computer Services Outfit

By Deborah Wise
CW Staff

RESACA, Ga. — The monks of the Monastery of the Glorious Ascension used to run a reform school for boys on a Mississippi farm. They now manage a computer services operation here.

After a dramatic, almost fly-by-night departure from the farm, the monks set up MGA Computer Services, Inc. in June. MGA — an acronym of the order's name — offers mailing list, fundraising letter drives and reproduction services to mainly nonprofit organizations in the Southeastern states.

The order started in California, but moved to Picayune, Miss., in 1970 to take over the management of a reform school called St. Michael's Farm for Boys. Initially part of the Monastic Congregation of St. Augustine, an Episcopal denomination, the five monks switched orders to the Russian Orthodox Church in America in 1976 because of what they called "doctrinal disagreements."

St. Michael's farm, which aimed to be as self-sufficient as possible, received donations from an Episcopal board of trustees. The board was concerned at the monks' conversion to Orthodoxy, but because they thought the farm was well looked after, they let the matter rest.

However, the monks became disenchanted with teaching and farm management, according to Rev. David Yancey, the farm's present director. The animals were sold and the farm ran into disrepair; when the boys attending the school had completed their programs, the monks sent them home and moved out themselves.

Better Location

After friends and associates suggested there was a need for computer services in the Southeast, the monks came here "to be more centrally located for our diocese," according to Father Michael, who directly manages the computer services business.

The monks lease an IBM Office System 6 and the IBM System/34. "We want to take just enough business to do high quality work to provide support for the monastery and no more," Father Michael said.

However, there seems to be some confusion over the monk's departure from the farm. They maintain they informed the trustees of their decision to change jobs, but the farm's new director, Rev. Yancey, was puzzled by the abruptness of that decision.

Yancey described the monks as having "gone crazy." He commented that he found it strange that the same people who had left the farm's bookkeeping in a mess had gone on to set up a records service.

"The files for the last three years are in kind of a state, and we are in the process of trying to find out what the story is," Yancey said.

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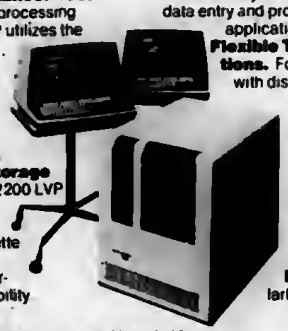

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Workshops Ease Computer Fears

PHILADELPHIA, Pa. — In an effort to acquaint management personnel with computer technology and its effect on jobs, the City of Philadelphia recently sponsored a series of two-day computer literacy workshops for its employees.

"The program was designed to help nontechnical people communicate with technical people," explained Dr. Louis Malfara, director of training for the city.

Sixty middle to upper level management employees from all city departments attended the workshops conducted by Executive Technology Associates (ETA), management advisers and trainers from Allentown, Pa. Using microcomputers for hands-on experience, the "students" were introduced to the concepts of office automation and computer capability.

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We could go on, but why not find out for yourself? We'll be glad to schedule a free demonstration at your convenience. Or we'll send you our latest brochure. Just call us or return the coupon.

Incidentally, you can get all the advantages of ADABAS for a *fraction* of what the Russians were willing to pay!

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1110

Staged by California National Guard

War Games Simulate European Confrontations

By Bruce Hoard
CW Staff

BARSTOW, Calif. — The scene was right out of *The Third World War: 1985*. Warsaw Pact troops poured across the Czechoslovakian border into the Federal Republic of Germany. Beleaguered Nato forces gave way reluctantly while inflicting heavy damage on the aggressors.

But this battle took place in Central California, not Germany, and its outcome was determined not by bullets and bombs, but by computers in Kansas City.

It was all part of the California National Guard's Computer Assisted Map Maneuver Simulation (Camms) war games, held at Fort Irwin near here and at Camp Roberts in Southern California.

Only 1,250 people were involved in the games, but the scaled-down force represented a full-blown division of 20,000 to the Kansas computers. The Camms system also cut down on the time normally associated with war games. Several weeks of warfare were condensed into 24 hours.

Tactical Decisions

Tactical and strategic decisions were made by company, batallion and division commanders in the field, where most of the personnel were deployed. Decisions were relayed to Fort Irwin and Camp Roberts via radio communications.

The "war room" at Fort Irwin was equipped with two large table boards, manned by up to 40 people each, on which players and pieces representing men and machines were manipulated in accordance with field orders. Camp Roberts had one such board.

Once orders were relayed from the field to the board, they were entered into the Kansas City Control Data Corp. 6500 computers of United Computing System, Inc. The connection was made via dial-up lines attached to Texas Instruments, Inc. TI 745 CRT terminals at Fort Irwin and Camp Roberts.

The probability-based Camms software then took over, rendering life-and-death decisions over troops and equipment.

Critical knowledge programmed into the system includes weapons capabilities and their potential in given geographical areas.

Glaring Weaknesses

The Camms system has been around since 1975, and it has some glaring weaknesses, according to the 40th Infantry Division's Colonel James Jones.

"As it works now, there's not enough resolution," he said. "For instance, if a vehicle is damaged, we don't know the exact damage, so we can't decide on whether to repair it or not."

The "Broadsword" system, as it is called, will soon be replaced by Broadsword II, a more sophisticated model with higher resolution that will increase the realism of the national guard's mock battles, he added.

As for the outcome of this battle, it was a draw. After the guard's top brass decided enough key decisions had been made and imaginary blood spilled, they simply called off the first battle of World War III.

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USAF Center Now Permanent

SAN ANTONIO, Texas — The prototype centralized information processing center established here in 1973 by the Air Force has been redesignated as the San Antonio Data Services Center (SADSC), a direct reporting unit of the Air Force Communications Command, thus affirming the success of the project.

The SADSC is called a regional center at present, though it is the only one of its kind and services Air Force organizations nationwide. Plans are being discussed, however, to establish other centers in Oklahoma and on the East Coast.

The center's Burroughs Corp. B4700 and IBM 4341 — recently upgraded from an IBM 360/65 — handle data processing work for a variety of Air Force organizations including the San Antonio Air Logistics Command, Air Training Command, Air Force Medical Systems Command and the General Accounting Office, among others.

The center is run on a time-sharing, fee-for-service basis and was set up, according to an Air Force spokesman, "to realize the cost advantages accrued through consolidation of computing equipment combined with the greater economic returns due to large-scale operations."

Besides providing information processing services, the center also acquires and installs remote job entry terminals and communications equipment anywhere in the U.S. for Air Force organizations.

It gives backup services such as conversion advice, user training and many other customer/service support functions, according to a spokesman.

Colonel Roy E. Salziger, who headed the SADSC from the beginning, will retire this month to be replaced by Colonel Anthony L. Baggiano.

PREMIUM COMPUTER.

When Wisconsin Life added a Level 6 computer their customers were the real beneficiaries.

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Wisconsin Life is benefitting from something we call Businessware. A well-balanced combination of the right hardware, the right software, and Honeywell's vast business experience.

Everything our salespeople have learned in 25 years of working with businesses has been put into Businessware.

TPS-6 is part of Businessware. Thanks to this built-in transaction processing system, Wisconsin Life's new computer is helping in three key areas. First, linked to a network of 60 terminals, it's making clerical functions easier to perform.

Clerks now use terminals to check the nuts and bolts of individual claims: Is this policy valid? Has this claim been paid before?

In all, there are more than 30 screen formats.

Once a claim has been approved, a check is written that night. Since the Level 6 arrived, many claims have been paid in a single day.

The Level 6 has also been helping Wisconsin Life develop new applications for their transaction processing capability. For instance, there's a program in the works now that will enable them to process all new business on-line.

One advantage is that the computer can be used to calculate premiums, thus eliminating a great deal of work currently done by hand.

Finally, the Level 6 runs a very efficient data entry facility. Once CRTs are installed, clerks will be able to correct errors immediately, substantially reducing overall system maintenance costs.

Services Improved.

Wisconsin Life's new Honeywell is doing precisely what we knew it would. It's giving them greater control of their operations. And in so doing, it's increasing the quality of service Wisconsin Life offers their customers.

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For a more detailed look at the Level 6, write Honeywell, 200 Smith Street (MS 487), Waltham, MA 02154.

Honeywell

Agnet Harvests Computer Services for Farmers

By Deborah Wise
CW Staff

LINCOLN, Neb. — Until recently, only large agribusinesses could cost-effectively utilize information processing services, but an agriculture computer network known as Agnet is now providing computer services to farmers and those in the agricultural business for $10 per hour.

Agnet offers all types of information to help farmers and businesses make day-to-day decisions on such things as crop organization, irrigation costs, livestock accommodation and feeding mixes, for examples.

The network, which runs on an IBM 3031 mainframe, was developed in 1975 by Prof. James Kendrick, an agricultural economist at the University of Nebraska, and Prof. Thomas Thompson. It has a base of 200 programs that can be accessed by any Teletype-compatible terminal with an acoustic coupler.

At present 30 states in the U.S. and two Canadian provinces use the network. "We wholesale time and services to the states," Kendrick said.

Inputting information is free of charge, but "think time" costs $10 per hour, and the charges on the Wats line link-up run at 20 cent/min during prime time (8 a.m. to 5 p.m.) and 13.5 cent/min off-peak.

Decentralized Control

The original six Agnet partners — the states of Montana, Nebraska, North Dakota, South Dakota, Wyoming and Washington — have decentralized control and can add or omit programs to their own data bases without consulting the national Agnet office here. This allows for the accommodation of local conditions and a flexibility to write new material when required.

At present negotiations for other states to enter into this kind of relationship with the national Agnet office are under way, Kendrick said.

"Many states are interested in providing modern management services to agricultural businesses, so there is a lot of pressure to develop some sort of system," Kendrick said. "Rather than developing their own system from scratch, we offer a ready-made network."

Reaction among farmers and agribusinessmen has been favorable, according to George Hartman, a farmer and rancher who helps promote Agnet in Nebraska.

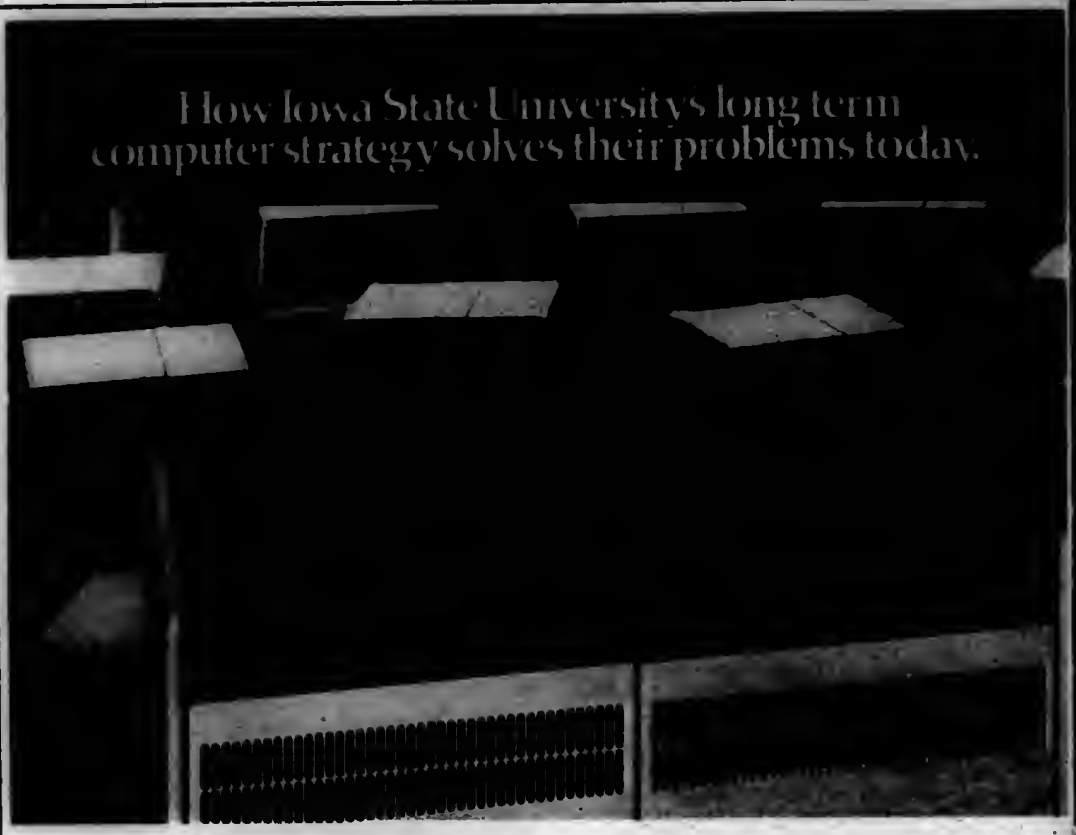
He introduces the system by talking to farm organizations and young farmers' educational groups as well as individual farmers. In Nebraska the service is offered through local county extension offices of the University of Nebraska.

"Initially I get a mixed reaction, but when the farmers see what kind of information is on the Agnet system and what it can do for them, the reaction becomes most favorable," Hartman said.

Kendrick estimates that the service is used about 6,000 hours per month.

'The Meat and Potatoes Are Go, the Gravy Is Holding, and the Stewed Tomatoes Are In an Error Condition.'

DATA TRAINING '80



One of the most difficult problems faced by computer centers is planning for future needs, while at the same time meeting today's skyrocketing demands.

But some universities, like Iowa State, have found a simple, practical solution. Distributed processing with Digital. Thanks to Digital's broad line of compatible minis, superminis, and mainframes, they can add and reassign computers as needed.

Distributed processing with Digital means more students get more time on more terminals.

To solve one of their biggest problems—availability—Iowa State bought one of Digital's VAX systems in 1978. The VAX-11/780 gave them the ability to connect 64 interactive terminals to one computer, which they spread out among various math, engineering and science departments. Then when funds became available, they added another VAX-11/780 and 64 more terminals, including several in special dormitory rooms.

"Until we acquired the VAX systems," says Dr. Clair G. Maple, Computer Center Director, "Iowa State was not providing enough accessibility to our students. We wanted to get into an interactive, distributed environment, and the VAX-11/780, with its 32-bit architecture, gave us a lot more power than a standard mini.

"We also look at the VAX system as more than just an object of study, we see it as an educational tool," says Dr. Maple.

The VAX-11/780 is a natural for teaching computer science. But it's so simple and so widely available, just about every department is using it—no matter what level of understanding the students have.

Dr. George Brant from the College of Agriculture explains, "We have a program that teaches students to estimate the amount of meat they'll be able to sell from a steer carcass. The program is already written, so the students simply follow the program sequence, prompted by the system each step of the way. If the student enters an incorrect answer, the computer instantly tells him he's wrong. That way the students get a better understanding of the problem, and can keep on working until they get it right."

Of course the VAX-11/780 is also used for extremely complex computations in departments like mathematics, engineering and aerospace. And it's been a tremendous tool in those departments as well.

Distributed processing with Digital means an introduction to the real world.

According to Dale Anderson, Prof. of Aerospace Engineering, the university's combination of a mainframe supplemented with VAX systems

For Competitive Environment of '80s

S&Ls Told to Align Computer, Business Strategy

SAN DIEGO — Alignment of computer strategy with business strategy will be vital to the success of thrift institutions in the radically changed competitive environment of the 1980s, a meeting of computer professionals from the savings and loan (S&L) industry was told here recently.

"More sophisticated computer systems will be crucial not only to handle the growing array of new services permitted by deregulation, but also to support decision making by managers who will have to become increasingly informed and decisive," John M. Thompson, vice-president of Index Systems, Inc., told the U.S. League of Savings Associations' Systems Automation Division.

Most software currently used by thrift institutions is inadequate to meet these increasing demands: "Business strategies and information system strategies are going in different directions, pulled by rapidly changing market and technological conditions," Thompson maintained.

In the environment of the 1980s, development of new systems can pose far higher risks than in the past, he warned.

"There is nothing wrong with risk as long as you know you are taking it and plan improved capabilities by assessing the risk/return relationship of each project, scheduling to balance the risks as in an investment portfolio. Too many high-risk projects at the same time should be avoided, no matter how high the potential return each may offer," he advised.

Index Systems, a management consulting and systems development firm based in Cambridge, Mass., recently completed a study of the S&L industry for the U.S. League of Savings Associations. Results of this study have been utilized to produce a kit to help league members evaluate their own DP resources with guidelines for planning future requirements under various potential business and service scenarios.

"The first thing to do is to assess where you are by evaluating your current risks in relation to your own business and technological situation," Thompson said.

Major Factors

Major factors that affect the risks associated with systems development include the size of the project, whether the technology involved is new to the organization and whether the project deals with routine accounting functions or more complex needs such as financial planning.

In addition to project risks, assessment must be made of the institution's current DP resources relative to business strategy, according to Thompson. This calls for particular attention to the growing need for systems that give management interactive access to timely information to aid business decisions in a more competitive environment, he emphasized.

"Achieving these decision support systems requires a different approach to software development as well as the direct involvement of management in defining the information needs," he added.

"We have accepted the need for strategic planning in our businesses," Thompson observed.

and more than 40 other minis from Digital gives students a better feel for computers used in the real world.

"We had little distributed processing here until Digital. With the VAX-11/780, students are using terminals interactively to study aerodynamics, structural dynamics and propulsion. Not only do they learn faster that way, they're better prepared for jobs in the real world when they leave college."

"No matter how the system is used," says Dr. Maple, "the students are finding that the VAX-11/780 is very easy to operate. It's had tremendous acceptance to the point that, now, in a peak month, 36,000 log-ins have been recorded, averaging more than 40 minutes each."

The Iowa State story is just one example of how Digital is committed to making the computer a practical, economical and accessible tool for education. We offer the world's broadest and most widely used family of educational computers—from entry-level minis to 36-bit mainframes. Plus the networking tools to tie them together.

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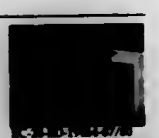

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Minis Pressed Into Service at Marines' Race

Special to CW

WASHINGTON, D.C. — Nearly 10,000 runners and two minicomputers participated here last week in the 1980 Marine Corps Marathon, the fifth annual race sponsored by the U.S. Marines.

As runners crossed the finish line, an official timer pressed a push-button control linked by wire to a Hewlett-Packard Co. HP 1000 minicomputer housed in a nearby van. Each time the button was pushed, an interrupt occurred, resulting in a computer-recorded time-of-day log, explained Major R.M. Rudolph (USMC), data processing coordinator for the race.

When a large group of runners converged on the finish line, the timer simply pressed the button as many times as necessary for the finishing runners. Runners who crossed concurrently had finishing times within hundredths of a second, Rudolph said.

Winner in the men's division was Mike Hurd of Suffolk, England, who finished in two hours, 16 minutes and 55 seconds. Placing first among the women was Jan Yerkes of Buckingham, Pa., with a time of two hours, 39 minutes and 53 seconds.

The mobile HP 1000, which included an HP 7906 disk drive and an HP 2608 400 line/min printer, had access to an HP 1000 F-Series processor at marathon headquarters in Rockville, Md. The F-Series computer with 1M byte of memory and 20M bytes of disk storage contained registration information collected by Marine Corps personnel months in advance.

During race week, registration continued at a Washington, D.C., hotel where the Marines had set up an HP 2648 CRT terminal that was linked by telephone to the F-Series machine.

Bar Coded Labels

In addition, registration procedures were also aided by a Dataroyal, Inc. bar code printer that provided an adhesive-backed label for each runner with his name, number and a bar code of the number printed on it.

By using the bar code technique, accurate time and place results were available to runners and the press several minutes after the completion of the race.

In order to keep the runners' finishing times matched with their numbers, the runners were herded into chutes as they crossed the finish line. There the Marines scanned each person's bar code with the reader and transmitted the information via terminal to the HP 1000 in the sideline van.

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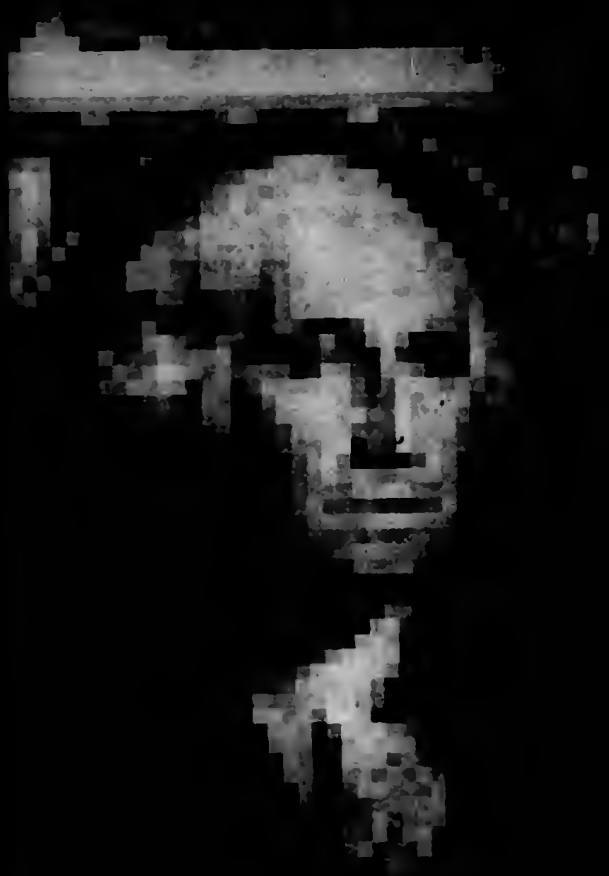

Guide Lists Consultants

SAN JOSE, Calif. — A free directory of 150 Southern California-based consultants has recently been published by the Professional and Technical Consultants Association (Patca).

People who specialize in cutting phone bills, getting patents, evaluating software and microcomputer systems and marketing practices can be pinpointed with the reference tool.

Also available through Patca is a free referral service. Further details and directories can be obtained from Patca, Suite 3, Department RC75, 1190 Lincoln Ave., San Jose, Calif. 95125.

Communications Topic of Seminar

NEW YORK — "The New Office Communications Capabilities" is the name of a seminar being offered by Probe Research, Inc. here on Nov. 18-19.

The user panel at the seminar will include George Grove, regional director of telecommunications for the U.S. General Services Administration; Charles Schweis, manager of telecommunications of Ciba-Geigy Corp.; Brian Paxson, assistant vice-president of voice services at Equitable Life Insurance Co.; William Osborne, communications analyst at Bankers Trust Co.; and Donald Smith, former director of communications at *The New York Times*.

Interested parties can obtain further details from Probe Research, Inc., P.O. Box 251, Millburn, N.J. 07041.

Tracks Driving Strategy

Mini Gives Al Unser Racer's Edge in Mexico

By Bruce Cross
Special to CW

MEXICO CITY — "We didn't win the race," said Al Unser, steely-eyed driver of the Longhorn car in the Copa Mexico Indy 150 race held here late last month, "but that computer gave us the driving strategy that let us come in third place.

"You know, racing is not just driving like hell to get here first. There's a strategy to it. Every time you have to stop to take on fuel, it costs time. That's the whole point of our using a computer — to help us manage our time, to help us manage our fuel consumption."

Why does a Formula 1 race driver use a computer during a race? "It tells us when to burn up the track and when to back off and go easy on the fuel so that we'll have to fuel up one less time — and save just that much time," the two-time Indy champion explained.

"Bobby Hillin, owner of the Longhorn racing team, started racing with a computer in March 1980. We got the idea, the inspiration if you will, that a computer could help us plan strategy for our race," Unser said.

"We looked at several machines — Wang, Radio Shack, I think a Digital and Basic Four. We chose Basic Four Corp. because, aside from being a mini that could do the job for us, Basic Four was willing to agree to a deal that we couldn't refuse: We got the computer system in exchange for giving them the marketing rights to use the Longhorn racing team name in their own promotion.

"Basic Four supplies us with a Model 410 mini. With it comes three video terminals, a disk memory, a magnetic tape unit and cartridge, the software, plus four persons to run the system — a software field engineer, a maintenance expert and two data entry experts," he said.

Paramount Jobs

Jon Simms, the Basic Four development engineer who is responsible for software, described two paramount jobs that the computer does for Longhorn racing.

"First it tells us how everyone is doing at any given time in the race. Second — and this is the most important thing — the computer keeps track of fuel consumption on every lap of the 17 leading cars in the race.

"Every car carries 40 gallons of fuel," explained Simms, who looks more like a cowboy than a software expert in his tall Western hat and red bandana. "Our computer keeps track of each time a car stops and takes fuel. Every time a car stops for any reason it is fueled, so we know that every time a car pulls back onto the track it's going with a full tank."

"With all those facts," Simms said, "We can predict pretty accurately when each car will have to pull into the pits again — and we can predict what its position will be in the race."

"The reason for this is simple," he added. "We want to know when things are going to happen. We want to know when we're going to have to make pit stops for gas and tires. If we know that, then we can plan how we will run the rest of the race."

P.J. Schmidt uses a Basic Four model 7250 CRT terminal to enter data for each competing car into the Longhorn computer. Data fed into the computer includes how many laps each car completes, the times of those laps, fuel used, tire replacements, time of each pit stop and time under the caution light.

The computer tracks all the cars, but displays only the 17 fastest cars. It also computes the apparent fuel consumption of each car. With that information the computer is able to predict when each car will again have to stop in the pits for fuel and for new tires.

"So we can see what our position is against our top competitors," Hillin said. "The computer helps us with our racing strategy because it can keep track of many more variables than can one of us poor humans — and do it accurately.

"Let's say that we're running close to another car and there are only maybe 20 laps left in the race. We know what the other car's apparent fuel consumption is — we know that it's going to have to make a pit stop for fuel before the end of the race, and we know what our car's got.

"We know that if we slow down slightly, we will improve our own gas mileage and we can complete the race on the fuel we've got left if we ease off a bit.

"So that's what we do. We call our driver over the radio — he's got headphones built into his racing helmet — and we tell him to slow down a little.

"We let the other car pull ahead — because we know that he's going to have to stop for fuel while we'll just keep on going nice as pie to the finish.

"We started running with a computer in March of 1980," Hillin said. "We ran with it in 12 races prior to the Copa Mexico, and we led in four of them.

"But I believe that when it comes down to the crunch, then the computer can make all the difference and give us the strategy to win."

Cross is an associate editor of Computerworld/Mexico.

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ipl SYSTEMS INC.

St. Jude Hospital Enlists Dual ARC Systems for

SAN ANTONIO, Texas — St. Jude Children's Research Hospital here, celebrating its 18th anniversary, has made great strides over the years in medical data management and earned world acclaim for its research into catastrophic childhood diseases.

The development of a comprehensive information system has allowed important improvements in patient care in both the pharmaceutical and business administration functions of the hospital's complex treatment and research center.

The pharmaceutical department, headed by Larry Barker, is using a Datapoint Corp. Attached Resource Computer (ARC) system for all of its data entry and the major portion of its processing tasks.

The system is based upon 10 Datapoint processors and associated peripheral equipment.

Completely interconnected with a high-speed interprocessor bus, the system currently supports 25 Datapoint Model 3600 video display workstations dispersed throughout the facility on a functional requirement basis, four mass storage file units with a total storage capacity of 240M char. of information, 10 printers and one magnetic tape unit (see figure).

Included in the pharmaceutical application of the ARC system are patient data center, kinetics laboratory, contagious isolation, dietary pharmacy outpatient, accounting reports and bio statistics.

Also included are programming, order entry, labeling, general pediatrics and several more functions.

These categories and others interact to receive, share and disperse data wherever required within the total system.

In the order entry program, for example, a physician's prescription is entered into the system. The system then checks the interacting of this order in comparison with previous treatments and the possible accumulation tendencies of such treatments for current dose acceptability.

Patient's Protocol

The system also checks and determines if this order meets the patient's protocol which is necessary in keeping pure research data. If all is acceptable, the order is approved and entered as a valid prescription, the label automatically typed on a system printer and the dosage issued.

The Bio Statistics Department produces heavy numeric processing requirements and uses a Datapoint 3800 workstation to preprocess data and prepare a data tape on an associated tape drive. The taped data is then transferred to a Data General Corp. mainframe for final processing.

The processed data and statistical information is transferred back to the 3800 via tape and entered into the ARC system for dissemination to the proper files and for the preparation of required reports.

Six Inventories

Within the total pharmacy system there is a $500,000 inventory in medicines and $250,000 in supplies at any one time. Drugs are so closely controlled that up to six separate inventories are kept in balance on the overall inventory on a real-time basis.

These inventories include drugs in warehouse not issued to pharmacy, drugs locked in pharmacy storage not issued, drugs assigned to pharmacy front counter, drugs on dose carts being administered to inpatients and out-

(Continued on Page 41)

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Fenwick Elected DPMA President

PHILADELPHIA — P. Roger Fenwick was elected international president of the Data Processing Management Association (DPMA) at its annual meeting here recently.

Fenwick, district staff manager at New York Telephone, New York, is responsible for developing, implementing and maintaining that company's billing methods and procedures. He will assume office on Jan. 1.

During his one-year term, Fenwick will head the 28,000-member organization in its goals of educating members and the general public about the information management field.

Chairman Named For DPMA '81

SAN FRANCISCO — Gene C. Giannotti, director of the San Francisco Bay Data Center for GTE Data Services, has been appointed honorary conference chairman for the 30th annual international conference and exposition of the Data Processing Management Association (DPMA) to be held here on Nov. 1-4, 1981.

Giannotti earned his certificate in data processing in 1967 and has served as president of the San Francisco chapter of DPMA from 1971-72. He has published articles on information processing and has contributed to one college text on the subject.

The DPMA '81 conference will feature over 50 siminars, workshops and special sessions related to information processing management functions, trends and industrial applications. Further information is available from the DPMA's International Headquarters at 505 Busse Highway, Park Ridge, Ill. 60068.

Research in Catastrophic Childhood Diseases

(Continued from Page 40)

patients and drugs in shipment to local treating doctors.

When there is a need for additional data or program changes, the requesting doctors or committees use a request form developed by the Patient Data Center to specify the information need that is not being currently provided.

This can result in new program development, existing program enhancement and even the acquisition of new equipment within DP or in the laboratories which would be needed to provide data for the ARC system.

St. Jude's Pharmacy System, which was developed by Gamma Systems Services of St. Petersburg, Fla., uses predefined formats to guide most data entry functions.

This reduces errors and allows data to be entered at more than one workstation by various operators and still be valid.

Doctors and clinical personnel quickly learn to use the system simply by using a patient's name or number for bringing up a complete data review, either on the video display or by hard copy from a system printer.

Second System

In addition to the medical information systems, St. Jude Hospital has a second Datapoint ARC system which is used in the business office for numerous applications.

The business office ARC system consists of five Datapoint processors, three printers, 13 workstations and four mass storage units with 100M bytes of capacity.

"We are pleased with the versatility of the ARC system. Its ease of programming and operations makes it very useful both as a learning device and as an operational system of business machines," Administrative Computer Services Director Charles Sanders observed.

"Our dual ARC systems have upgraded our operation substantially and enabled the entire staff and facility to provide our patients and vendors with much improved service."

Within the Blood Bank program, for example, a donor file is maintained on all donors, providing a complete history on all donations by name, blood types and other culture breakouts.

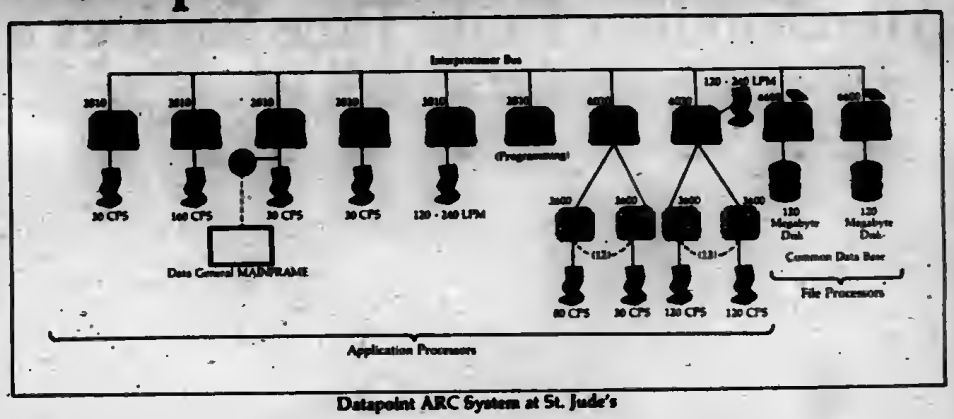
Exacting Inventory

An exacting inventory is kept on the location of all blood and the system "rotates" the inventory to ensure first-in and first-out usage. The file also contains all blood assignments to patients, records the actual infusion amount and any amount returned unused.

A complete transfusion record is maintained in the system on each patient and the data shared with other programs and files requiring the information.

"The volume of our work load, the inventory turnover, the legal requirements for reports, and just the sheer amount of paper work associated with our function could never be accomplished on a manual basis," according to Keith Kunkel, Blood Bank supervisor.

"The ARC, and its ability to share data and files, provides us with the services we need."



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With Hand-Held Terminals

Merchandiser Finds Time Savings in Its Hands

JACKSONVILLE, Fla. — With a single stroke, Sav-A-Stop, Inc., the nation's largest service merchandiser, has enabled its sales force to handle an additional 20,000 customer calls a year.

The time savings was accomplished through the purchase of 875 hand-held data entry terminals. Initial deliveries of the terminals to Sav-A-Stop began last summer, and the company is now putting them in the hands of its more than 800 salesmen, or "route merchandisers."

"We'll more than pay for the MIS/88s from MSI Data Corp. with the increased productivity of our route salespeople," Gregory Kaelin, corporate director of operations, stated. "But there will be substantial savings in other areas, too."

The company's method of ordering was virtually unchanged during the first 25 years of operation.

Each Sav-A-Stop route merchandiser maintained a separate order book for each customer and on each sales call would enter the quantity of each item ordered for that customer.

At the end of the day the route merchandiser would return to the territorial subwarehouses, drop off the order books and pick up the latest shipment of merchandise delivered by truck from the main warehouse to the region.

At the end of the delivery run, the tractor/trailer driver would retrace the route and pick up the order books left at the subwarehouses by the route merchandisers. The complete cycle took seven days.

Electronic Experiment

In 1975, Sav-A-Stop began experimenting with electronic ordering. That year it bought 10 Source 2100 portable data entry terminals from MSI and the following year puchased 130 Source 2200s equipped with scanners to read the MSI (modified Plessey) bar code.

Around these terminals, the company developed its Star system for Sav-A-Stop transmission and recording.

The terminals were placed in the company's 210 subwarehouses and, at least twice a week, each route merchandiser returns to the subwarehouse to turn over the order books to a data entry clerk, who scans the bar code beside each item ordered for each customer.

At the end of the day, the clerk dials the Sav-A-Stop divisional main warehouse and transmits all of the orders recorded.

The system's benefits include:

- More economical use of Sav-A-Stop's truck fleet by giving a 24- to 48-hour cushion. As soon as an order is received from a subwarehouse via a data entry terminal, Sav-A-Stop simulates the order on its IBM 370/145 computer, checking to ascertain whether all items are in stock or will be by shopping time.

This enables the firm to determine whether it has enough of each item to fill the order and facilitates scheduling of delivery runs. Additionally, trucks have more time to pick up merchandise from suppliers.

- Ability to receive orders up to midnight any night of the week via random dial-up.
- Reduction in the number of out-of-stock items on the picking lines.

Comparison Shopping

Sav-A-Stop eventually decided to upgrade and selected the MSI/88, but not until it had completed an extensive analysis of the products of two other competitors.

"The MSI was chosen because the terminal seemed to be sturdier and better constructed. We particularly like the sealed circuitry of the MSI/88, in view of the fact that we wanted a terminal our route merchandisers could take with them on their rounds," Kaelin said.

One of the savings identified by Kaelin was elimination of the individual order books maintained for each customer. Now the company has developed not only standard order books but also customized order books for each of its four types of customers — supermarkets, convenience stores, department stores and drug stores.

Today, the Sav-A-Stop route merchandiser no longer has to write anything to record an order.

The merchandiser simply takes the appropriate order book and scans the bar code for each of the different items of merchandise to be ordered for each customer.

Using the MSI/88 with bar-coded order books, Sav-A-Stop expects to save at least $75,000 a year on order books alone, Kaelin asserted.

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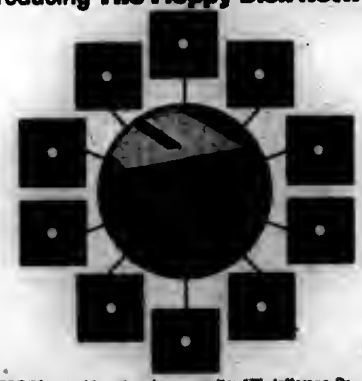

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Sparks Corporate Rethink

Power Plant Switches to Paperless Transactions

GUELPH, Ont. — When Canadian General Electric (CGE) wanted to revamp its inventory system, collect supplier debts and reduce clerical staff at its power transformer plant here, it installed an on-line manufacturing control system.

Since then, the plant, which employs 800 workers, has discovered the advantages of rapid and efficient information management and paperless transactions. The system has led CGE to rethink many aspects of the way it does business.

CGE's material group's modernization objective was to integrate all master scheduling, purchasing, inventory control, production control, traffic, customs, stores, receiving and operational planning within one system.

But according to Jim C. Gray, material manager, one of its first lessons was that software should dictate the selection of hardware. After investigating many packages, CGE selected the MS-11 manufacturing system from NCA Corp. Its software was specifically designed for Digital Equipment Corp. PDP-11 mini computers.

CGE chose MS-11 after being impressed with its proven customer base. "Proven, to us, meant that it had to be in use for at least a year," Gray said. "We were able to obtain a list of MS-11 installations and compare their results with our expectations."

Predicting the modernization effort would pay for itself within a year and a half, GCE expects benefits in three categories. First, a reduction in inventory by reducing queues of material ahead of final assembly. Secondly, improvement in purchasing due to use of commitment reports, better supplier tracking and negotiation. And finally, a reduction of clerical staff.

Inventory Control

Fully integrated with the MS-11 system, CGE uses the (material requirements planning) (MRP) capabilities as an inventory rescheduling mechanism. When schedules change for any reason, these changes can be reflected at all levels down to individual purchased parts and raw materials. "Real-time operations are the key point in having better confidence regarding the location of material orders and their due dates," Gray commented.

Also contributing to inventory control are commitment reports, another by-product of the MS-11 system. A detailed and aggregate tally of all items promised to be bought from vendors in this and all future periods, the commitment report is analyzed by Gray and his supervisors on a regular basis.

"When the aggregate for a current month is running higher than our estimate of what the aggregate should be, we can look at all the items and determine which jobs they are scheduled for," Gray explained. "From there, we decided which purchases should be delayed."

Pressuring Suppliers

CGE uses up-to-the-minute MRP reports from MS-11 to put pressure on suppliers to improve their material shipments. For example, whenever supplier sales and marketing people call on CGE buyers, the buyer first takes them to a terminal and prints out the open-order status for that supplier. Discussion then becomes, "Before we talk about new orders, let's talk about what you still owe us."

MRP and open-order reports are also used to negotiate with suppliers for better prices.

To train suppliers in using its MRP System, CGE is developing a series of seminars. "If we can give them the whole picture of what is on order, say six months out, they can plan their production accordingly," Gray pointed out.

CGE's third objective, the reduction of clerical staff, was accomplished through attrition. Now inventory control, purchasing, receiving, stores and a large part of operational planning is handled realtime on one of 17 materials-dedicated terminals.

Minor Adjustments

CGE has made several minor adjustments to the software system. Most have concerned doing business in Canada as opposed to the U.S. and operating in a multinational environment.

"We needed conversion factors built in to compensate for different currencies and metric/standard measurement," Gray said.

"Also, our addresses had to be developed for intracountry exchange. NCA provided these when asked; and, in fact, incorporated some of them into their packages."

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Calendar

Nov. 19-21, Phoenix — **Simulation Modeling & Analysis.** Institute for Professional Education, Inc., Suite 303, 1515 N. Court House Road, Arlington, Va. 22201.

Nov. 19-21, Atlanta — **Effective Computer Operations Management.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

Nov. 19-21, Washington, D.C. — **Fiber-Optic Communications Systems.** Contact: Integrated Computer Systems, Inc., 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

Nov. 20, London — **FPS Introductory Overview.** Contact: STSC, Inc., 11 Clearbrook Road, Elmsford, N.Y. 10523.

Nov. 20, Chicago — **Software Maintenance Seminar.** Contact: Shetal Enterprises, Inc., 1787 B W. Touhy, Chicago, Ill. 60626.

Nov. 20, New York — **Financial Decisions: Choosing a Financial Decision Support System.** Contact: Real Decisions Corp., 123 High Ridge Road, Stamford, Conn. 09605.

Nov. 20, London — **APL*Plus Ltd. Introductory Overview.** Contact: STSC, Inc., 11 Clearbrook Road, Elmsford, N.Y. 10523.

Nov. 20-21, Middlebury, Conn. — **Software Reliability Seminar.** Contact: Computing Trends, Inc., 6925 56 Ave. S., Seattle, Wash. 98118.

Nov. 20-21, San Diego — **Educational Computing in the '80s.** Contact: Ron Langley, Computer Center, California State University, Long Beach, Calif. 90840.

Nov. 20-21, Washington, D.C. — **Computer-Aided Graphics.** Contact: Data Processing Management Association Education Foundation, 5959 W. Century Blvd., Los Angeles, Calif. 90045.

Nov. 20-21, Minneapolis — **Informatics National Shareholder Managers Symposium.** Contact: CSS/Informatics, Inc., Suite 387, 340 Interstate N. Parkway, Atlanta, Ga. 30339.

Nov. 20-23, Boston — **Personal & Business Computer Shows.** Contact: National Computer Shows, Inc., P.O. Box 678, Brookline Village, Mass. 02147.

Nov. 24-26, New York — **Developing Computer-Based Accounts Payable Systems.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020.

Nov. 30-Dec. 2, Andover, Mass. — **Imaging Industries Over the Next Decade.** Contact: Institute for Graphic Communication, Inc., Floor 4, 375 Commonwealth Ave., Boston, Mass. 02115.

Nov. 30-Dec. 3, Colorado Springs, Colo. — **Micro Thirteen, sponsored by the Institute of Electrical and Electronic Engineers and the Association for Computing Machinery, Inc.** Contact: G.R. Johnson, Engineering Science, Colorado State University, Fort Collins, Colo. 80523.

Nov. 30-Dec. 3, New York — **Money Transfer Conference.** Contact: Bank Administration Institute, Inc., P.O. Box 500, Park Ridge, Ill. 60068.

Nov. 30-Dec. 4, Houston — **National Telecommunications Conference.** Contact: Walter E. Ulrich Consulting, Suite 12, 11030 Kingspoint Road, Houston, Texas 77075.

Dec. 1, Chicago — **Utility Programs.** Contact: EDP Audit Associates, Inc., P.O. Box 366, Summit, Ill. 60501.

Dec. 1-2, Orlando, Florida — **How to Manage Data and Information as a Resource.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

Dec. 1-2, Utrect, The Netherlands — **Data Courier On-Line Training.** Contact: Data Courier, Inc., 620 S. Fifth St., Louisville, Ky. 40202. Also being held Dec. 4-5 in London.

Dec. 1-2, Atlanta — **Integrating Word Processing & DP.** Contact: Harvard University, Laboratory for Computer Graphics, 48 Quincy St., Cambridge, Mass. 02138.

Dec. 1-2, Boston — **Computer Graphics.** Contact: Data Processing Management Association Education Foundation, Suite 1016, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

Dec. 1-2, Cambridge, Mass. — **Data Base Management.** Contact: Harvard University, Laboratory for Computer Graphics, 48 Quincy St., Cambridge, Mass. 02138.

Dec. 1-2, Dusseldorf, W. Germany — **Viewdata Congress.** Contact: Dr. H. J. Grobe, Diebold Deutschland GmbH, Feuerbachstr. 8, D-6000 Frankfort/-Main 1, W. Germany.

Dec. 1-2, Chicago — **Computer Graphics: In-Depth Seminar on Application & Technology.** Contact: Harvard University, Laboratory for Computer Graphics, 48 Quincy St., Cambridge, Mass. 02138.

Dec. 1-2, Chicago — **DP Fundamentals for Management and Users.** Contact: Harvard University, Laboratory for Computer Graphics, 48 Quincy St., Cambridge, Mass. 02138.

Dec. 1-3, New York — **Data Communications: An Introduction to Concepts & Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held Dec. 8-10 in Denver.

Dec. 1-3, Phoenix — **Developing DP Systems for General Ledger and Financial Statement Preparation.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held Dec. 15-17 in New York.

Dec. 1-3, Mexico City, Mexico — **Designing, Installing and Managing an International Telecommunications Private User Network.** Contact: Kathleen Kerns, Telecom Systems Group, Inc.,

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Dec. 1-3, San Francisco — **Decisions by Design.** Contact: The Institute for Professional Education, Suite 303, 1515 N. Court House Road, Arlington, Va. 22201.

Dec. 1-3, San Diego — **Data Processing Security:** Contact: Data Processing Security, Inc., 200 E. Loop 820, Fort Worth, Texas 76112.

Dec. 1-3, San Francisco — **Local Network Architecture.** Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

Dec. 1-3, Arlington, Va. — **Computer Crime Info — Computer Security and Fraud Control.** Contact: Gil Merritt, The Information Exchange, Suite 400, 1730 N. Lynn St., Arlington, Va. 22209.

Dec. 1-3, Atlanta — **Fundamentals of Data Processing for the Non-Data Processing Executive.** Contact: The University of Chicago, Center for Continuing Education, 1307 E. 60 St., Chicago, Ill. 60637. Also being held Dec. 15-17 in New York.

Dec. 1-3, Toronto — **APL Systems Design.** Contact: Numetrix Seminar Administrator, Numetrix Ltd., Suite 600, 3 Church St., Toronto, Canada M5E 1M2.

Dec. 1-3, San Francisco — **Audit and Control of On-Line Systems.** Contact: the Institute for Professional Education, Suite 303, 1515 N. Court House Road, Arlington, Va. 22201.

Dec. 1-4, Phoenix — **Computer Elements Workshop,** sponsored by the Institute of Electrical and Electronics Engineers Computer Society. Contact: W. Rosenbluth, IBM, 9500 Godwin Drive, Manassas, Va. 22110.

Dec. 1-4, Phoenix — **Senior Project Management.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held Dec. 8-11 in New Orleans and Dec. 15-18 in San Francisco.

Dec. 1-4, Portland, Ore. — **Structured Systems Analysis and Design.** Contact: Oberland Associates, 4036 N.E. Sandy Blvd., Portland, Ore. 97212.

Dec. 1-5, San Francisco — **CICS/VS Intervals.** Contact: Online Software International, 65 Rt. 4 E., River Edge, N.J. 07661.

Dec. 1-5, Atlanta — **Structured Systems Analysis and Design.** Contact: Improved Systems Technologies, Inc., Suite 4500, 888 Seventh Ave., New York, N.Y. 10106. Also being held Dec. 1-5 in San Francisco.

Dec. 1-5, Miami Beach, Fla. — **Symposium on Distributed Data Acquisition and Control,** sponsored by the Institute of Electrical and Electronics Engineers. Contact: Dr. Earl Swartzlander Jr., TRW R3/2004, 1 Space Park, Redondo Beach, Calif. 90278.

Dec. 2-3, New York — **The Print Publisher in an Electronic World.** Contact: Sheila Frank, Knowledge Industry Publications, 2 Corporate Park Drive, White Plains, N.Y. 10604.

Dec. 2-3, New York — **Advanced Strategies in DP and Communications.** Contact: The Yankee Group, Harvard Sq., P.O. Box 43, Cambridge, Mass. 02138. Also being held Dec. 9-10 in Palo Alto, Calif.

Dec. 2-4, Cleveland — **Managing the DP Training Function Workshop.** Contact: Advanced Systems, Inc., 2340 S. Arlington Heights Road, Arlington Heights, Ill. 60005. Also being held Dec. 9-11 in Atlanta.

Dec. 2-4, Gaithersburg, Md. — **Precision Time and Time Interval Applications and Planning Meeting,** sponsored by the National Bureau of Standards, the National Air and Space Administration and agencies of the Department of Defense. Contact: Arthur McCoubrey, A-363 Physics Bldg., National Bureau of Standards, Washington, D.C. 20234.

Dec. 2-4, Roseland, N.J. — **Manufacturing Planning and Control.** Contact: Arthur Andersen & Co., Center for Professional Education, 1405 N. Fifth Ave., St. Charles, Ill. 60174. Also being held Dec. 9-11 in St. Charles, Ill.

Dec. 2-4, Andover, Mass. — **Home Video/Information Market.** Contact: the Institute for Graphic Communication, Inc., Floor 4, 375 Commonwealth Ave., Boston, Mass. 02115.

Dec. 2-5, Boston — **Computer Performance Evaluation in the '80s,** sponsored by Computer Measurement Group, Inc. Contact: Judith G. Ablock, Price Waterhouse & Co., Office of Government Services, 1801 K St. N.W., Washington, D.C. 20006.

Dec. 2-5, Atlanta — **Basic Project Management: Planning, Scheduling and Control.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held Dec. 8-11 in Boston and Dec. 15-18 in Phoenix.

Dec. 2-5, Sunnyvale, Calif. — **Programming in Ada.** Contact: Integrated Computer Systems, 3304 Pico Blvd., Santa Monica, Calif. 90405.

The CW Calendar generally appears in the first and second issues of each month, and events are listed a month in advance. All conference announcements should be sent to Calendar, CW Editorial Department, 375 Cochituate Road, Rt. 30, Framingham, Mass. 01701, at least six weeks prior to the month in which the event is slated to occur.

Dec. 2-5, San Francisco — **Voice Planning.** Contact: Systems Technology Forum, 8991 Cotswold Drive, Burke, Va. 22015.

Dec. 3-5, San Diego — **Planning Data Networks.** Contact: Technology Transfer Institute, P.O. Box 49765, Los Angeles, Calif. 90049.

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EDITORIAL

Too Much Interference?

With computers now being used in every facet of elections — from polling and targeting, through direct mail fund-raising and political persuasion, to electronic voting and Election Day results projections — one may well ask, "Who really elects the President?"

In the area of polling, computers allow pollsters to process huge amounts of demographic and survey data in an effort to pinpoint the issues certain voters want to hear about, how voters feel about a candidate's stand on those issues and how a candidate should present his views in a certain geographic area.

Such information can then be used as the basis for direct mail campaigns, in which campaigners send millions of computer-generated "personalized" letters to those people most likely to be receptive to the ideas presented in them.

Direct mail efforts can help raise hundreds of thousands of dollars, sway undecided voters toward a particular candidate, round up volunteer workers and get out the vote.

Then, on Election Day itself, millions of voters cast their ballots using either mark-sense or punch-card electronic voting machines that reportedly cost less; offer greater portability, storage and ease of use than mechanical lever-type machines; and feature audit trails as well, for greater accuracy. Those votes are commonly converted to impulses on magnetic tape and tallied by computer.

And while voters on the West Coast are still casting their ballots, armies of television poll-watchers, field interviewers, technicians and commentators are busy analyzing East Coast results in a network race to predict the winner.

Besides the argument that such projections take the fun out of the American tradition of waiting for the final election returns, there are those who fear such projections can actually sway Westerners to "go with the winner" or to become discouraged and not bother to vote at all.

While the computer-based methods certainly allow the candidate to use his campaign funds in the most efficient manner, it is obvious that the capability exists for manipulation of the electorate — especially through aiming specific messages at portions of the electorate and through Election Day projections.

It is time to ask whether it is the good of the candidate or the good of the state that is paramount. Are computers in politics simply the tools of man, or is the ordinary man at the mercy of those computers?

'Agree on the shape of the table? First they gotta agree to use a table . . .'

DATA PAST

Five Years Ago
Nov. 19, 1975

WASHINGTON, D.C. — The Federal Bureau of Investigation was denied permission to proceed with its computerized message-switching system until legislation could be passed to regulate the exchange of computerized criminal history information. U.S. Attorney General Edward H. Levi tabled the communications plan, bringing to an end a six-month dispute between the FBI and members of Congress.

— — —

MAYNARD, Mass. — Digital Equipment Corp. had completed specifications for its Decsystem-20. Internal company documentation claimed the hardware provided a multitasking, multiprogramming environment to support concurrent time-sharing, batch and transaction processing.

Eight Years Ago
Nov. 15, 1972

NEWTON, Mass. — Independent suppliers were exepected to have good news soon for IBM 360 users who wanted to add a virtual storage capability to their systems. Most independents and leasing companies admitted more than a passing interest in Dynamic Address Translation (DAT) "boxes," but it was believed that few already existed.

— — —

HOUSTON — While computer-based voting systems worked smoothly in most places around the country, a major problem occurred in Harris County (Houston), Texas.

Some names were reversed on the ballots and the entire vote was challenged on the basis of irregularities in the vote-counting system.

LETTERS

Scare Tactics

Computerworld erred in two areas in the Oct. 27 editorial "The FAA Must Act Now." First, by liberally quoting from other news media, the presumption is created that those writers are knowledgeable of the topics of which they write. Second, by reprinting rhetoric from the Professional Air Traffic Controllers Organization (Patco), CW articulates one side of a labor/management dispute.

As usual in a labor/management dispute, there is truth on both sides. The Federal Aviation Administration (FAA) is quite correct in pointing to the significant safety record that is a combination of computerized automation and professional air traffic controllers (people). The controllers are also correct in pointing to system deficiencies and inadequacies of equipment.

However, scare tactics and rhetoric that indicate potential mid-air collisions do a disservice to the public that travels by air. That public is relatively unsophisticated about flying and insecure in an unnatural element while completely in the hands of someone they neither know nor particularly trust.

I am a 1,000-hour pilot of some 11 years' standing with single-engine, multi-engine and instrument ratings. I am also a 22-year professional in the information systems industry with 15 of those years in management.

I strongly suggest that *Computerworld* stick to areas of known expertise — specifically, computers, data processing and information services — and not muddle in what is essentially a labor/management dispute.

Barry R. Hemphill
Elmhurst, Ill.

Project Deserves Contempt

Twelve years and only 25 cases of welfare fraud ["Matching Uncovers Two-State Welfare Fraud," CW, Oct. 13]! The auditors of Pennsylvania and Ohio used computers to match state welfare rolls and are presumably proud of this dubious technique which came up with $83,742 in illegal payments since 1968.

Has there been any statement of what the project cost? Especially in terms of lost opportunity to investigate corporate tax fraud, for example? I should think the state governments would be boasting of the integrity of their welfare-eligible populations rather than trumpeting this trivial success.

I should think computer professionals involved would be trying to pass on to their superiors the contempt that such a project deserves.

Peter S. Graham
Bloomington, Ind.

It Was a Basic Four

We'd hate to think that all word processing systems look alike.

For the record, the system displayed at top, center, on Page 11 of the Oct. 13 issue is the brand new Basic Four Spectrum 80 Information System, introduced at Info 80 by the Basic Four Information Systems Division of Management Assistance, Inc., not a Vydec word processor.

As the excellent story on Page 13 of the same issue indicated, Spectrum 80 Information Systems are in a class by themselves.

William F. Rigby
Group Vice-President
Marketing
Basic Four Corp.
Tustin, Calif.

Computerworld welcomes comments from its readers. Letters should be addressed to Editor, *Computerworld*, 375 Cochituate Road, Rt. 30, Framingham, Mass. 01701.

READER COMMENTARY — Durward P. Jackson

Deskilling Programming: Management Issues

The structured methodology debate is alive and well and living in the pages of the professional press. Structured programming, especially, is taking its lumps and receiving its share of praises.

Even James Martin [*Computerworld Extra!*, Sept. 17] has entered the debate arena by asserting that structured methodology can contribute at best 10% to programming productivity. Martin believes that order-of-magnitude improvements are needed in the decade ahead and that they can be achieved only through nonprocedural, very high-level languages.

He is right, of course. We do need the benefits of better software tools, and slowly we are getting them. Natural languages for data base update and retrieval are available, although they are better suited to prototype development and on-line query than to batch production systems. Application development aids and a vast array of utilities are reducing coding redundancy.

But strucutured programming does have its place. It is available today, easy to learn and, contrary to many opinions, adaptable to Cobol, the most widely used procedural language. Furthermore, it has the potential of greatly increasing programming productivity, certainly not by tenfold, but probably more than the 10% quoted by Martin.

Definition Hang-Up

One of the problems with structured programming is in the definition. Depending on the programmer's perspective, it is (a) the absence of GOTO statements, (b) extensive user of multiply-nested IFs, (c) table-driven code, (d) modular design, (e) "what I have been doing for the last 20 years" or (f) all of the above.

In view of all these definitions, one more could not possibly add to the confusion: structured programming is a *standard* methodology for creating programs that are elegant because of their *simplicity*, *reliable* because of the reduction of the number of "moving parts," *maintainable* because of their modular stricture and *minimally documented* because they are so explicit. Each of these characteristics deserves more discussion.

Standardization is as important in DP as in other corporate endeavors. Without standardization, training of new employees is difficult and effective quality control and supervision impossible.

Simplicity is an important feature of good engineering and good programming.

The engineering definition of *reliability* is based on how long something operates before it fails. Increased reliability in engineering systems is obtained from reducing the number of component parts, improving the reliability of each part and using redundant parts.

There is no direct parallel here between engineering and software reliability, but some of the same principles apply. For example, transfers of control (GOTOs) can be thought of as moving parts. Any reduction in the number of GOTOs should improve reliability because of the decreased structural complexity.

Maintainability is concerned with reducing the time required to correct malfunctions or make design modifi-

(Continued on Page 54)

SOFTLINE/Werner L. Frank

What Are We Integrating With WP and DP?

During the '70s it was very popular to speak about the integration of computers and communications. In fact, the relationship of these industries was often described as a marriage of two technologies.

We are now witness to another integration which, in keeping with the times, may be more of a cohabitation than a true betrothal. I am, of course, referring to the coming together of word processing (WP) and data processing.

The advertising hype, however, is confusing. It is not clear which of the following propositions are being put forth:

(1) The same computer can provide either WP or DP.

(2) In a given computer and given software operating environment, it is possible to switch back and forth between WP and DP.

(3) With a given computer, it is possible to simultaneously share the CPU resource for either WP or DP from any two or more terminals.

(4) A WP system is capable of being hooked to a second system which may be a DP system.

(5) WP documents, thought of as files, can be operated upon by the DP software, and vice versa.

(6) Data from files derived from DP can be accessed, coordinated and integrated into WP-generated documents.

(7) WP capabilities are enhanced beyond the mere handling of text to include additional functions, more often identified with DP, such as sorting and arithmetic operations.

(8) DP capabilities are enhanced beyond the mere handling of numbers and character strings that are associated with formatted files to also have the facility to manipulate text and manage documents.

(9) WP equipment and functions are part of a more total system inclusive of communications, DP and reprographics so that capture of information in any one medium or system becomes channeled and available in another.

(10) WP can be used to manipulate and reformat any file, whether originated under WP or DP.

(11) A common data base management system (DBMS) underlies both WP and DP.

(12) The terminal device and associated keyboard is designed to operate so that it can be used interchangeably between WP and DP.

(13) Both the WP and DP responsibilities throughout an organization are centralized within the same unit.

Synergy or Compatibility?

Perhaps integration is meant to suggest one or all of the above. It certainly is not clear from the promotional campaigns of the vendors whether the intent is to achieve synergy or compatibility.

Perhaps one way to approach the question of what "integration" is would be to review the changing aspect of DP and WP.

DP first took on an aspect of WP when the edit function was introduced through the popularization of time-sharing. This quickly led to early text-handling technology through mainframe-oriented systems such as IBM's

(Continued on Page 50)

HUMAN CONNECTION/Jack Stone

Execs Cynical About DPers, Not Machines

It may be hard to believe, but there are still many user executives and managers in major organizations who continue to shun all manner and form of computerization.

In explaining why this is so, we DPers usually sally forth with technology-driven reasons, such as:

- "User managers are technology ignorant, and they fear what they don't know."
- "User managers are concerned that machines will displace them and they are bothered by job insecurities."
- "User managers are worried that their employees will become more knowledgeable about the technology than they are and the employees will make the managers look foolish in the eyes of the top execs."

However, I recently became involved in a fascinating project from which I obtained an entirely different perspective on why certain user managers have played the arch-conservative role in the automation process.

Here is the situation. A large multinational organization is in the process of building a global distributed DP system. Unfortunately, the technolgical experience of nearly all the overseas offices is little more than the use of the hand-driven pencil sharpener.

Wisely, the DP department limited the initial phase of the program to the introduction of stand-alone minis that support several proven DP applications and word processing. Their implementation idea is to gain office acceptance of the local system and then, after the staff begins to rave about all the thrilling things they can do with it and cry out for more capabilities, hook it onto the net.

However, because the DP staff was so heavily involved in systems development activities and couldn't get too excited about training user managers and execs, the company went outside to get this job done and I wound up with the assignment.

Reasons for Foot-Dragging

The systems people warned me that I would see a great deal of resistance to the machines and cited all the reasons noted above, which, at least prior to the first class, I believed to be valid. But the user managers gave this explanation for their foot-dragging.

- "Just because we're not living in the States, it doesn't follow that we are unknowing about computer developments in multinational organizations. And even though we are inexperienced, we are fully aware of the significance of computer-based information systems and how they can help us improve the organization and maintenance of our data and provide us information services that are impossible to achieve otherwise. We are realists in what we can expect from computer systems and are sensitive to the problems of the development of worldwide networks."
- "In spite of our positive attitude toward business automation, our DP colleagues have chosen to give us the label of 'technology reactionaries.' We feel this is certainly unwarranted because we really are enthusiastic proponents of business automation. They don't seem to understand that we have a great deal more confidence in the way machines perform their jobs than we do in the DPers. Frankly, they have done such a lousy job, we don't want to waste our time supporting another dumb system."
- "And there's lots of past history to justify this assessment, such as this story. Some years ago, the DP department decided that all the overseas offices needed a certain complex business machine and a short time later, each office found one sitting on its loading dock. Although the machine had installation and operating instructions, almost no one in the field had the technical expertise necessary to interpret the instructions and use the equipment, and there were no plans for training.

"Furthermore, the equipment was hardly designed for the power supply conditions we have in many overseas areas, and after some offices finally figured out how to get the machine going, the fluctuating line voltage destroyed reliable operation.

"Finally, only a handful of offices were near the vendor's maintenance support facilities; so when the machines failed, most of the office managers moved them into dark corners to collect dust. This tale serves as an example of why it is the DPer, not the machine, that we don't want to do business with."

What Are We Integrating With WP, DP?

(Continued from Page 49)

ATS. Following this, two related capabilities emerged, the processing of text into a form suitable for photocomposition and the handling of text-oriented data bases for library-type browsing and reporting. These capacities were all big-computer-, DP-oriented.

In the meantime, the electric typewriter was extended in capability by introducing electronics and magnetic recording. Such systems were freestanding and independent of the DP center management, as well as separate from the computing tasks themselves.

As the CPU decreased in price and increased in capability and the CRT terminal became a lower cost device, the freestanding, enhanced typewriter became a freestanding electronic word processor.

The stage had been set: DP operated on files, WP produced documents and communications handled mail. These three functions seem to belong together and yet they were emerging in use and control in different parts of the organization.

Is not WP an example of where software could be eliminated and a hardwired solution would be most applicable?

However, a number of observations were made:

(1) Information collected under WP or DP could be of mutual use to the other system. For example, a personnel file contains names and addresses useful for generating letters. On the other hand, filling out a form, under WP, involves the collection of certain information that should find its way to a formatted data file.

(2) Documents generated under WP are at once also transmittable over communications wires and subsequently displayable on distant terminals. Text capture by WP is the single most important step toward realizing electronic mail and/or the paperless office.

(3) WP is a convenient way to restructure or reformat an output print file generated by a DP application program. In this way, the WP function could be used to generate more richly endowed text-oriented reports incorporating selected output information from formatted data files.

(4) The WP function is really a form of source data entry that has become a major focus for DP systems. The concept of one-time capture, no duplication of keystrokes, can be exploited via WP and the benefits passed on to DP.

Control, Consistency

This brings us back to the basic question of what is meant by integration. At a minimum, integration connotes the effort at control and consistency in use of hardware and communications to achieve information exchange between WP and DP. Such integration would be manifest if the following were possible:

(1) The WP device can interface through a standard communications protocol to a DP system and send text files (documents) for storing and/or forwarding.

(2) Information entered via WP can be selectively identified and peeled off into separate files that can subsequently serve as input files into well-defined DP applications.

(3) Text captured by WP can be further processed into specialized and structured files suitable for formatted handling within the capabilities of the modern DBMS.

(4) Data files derived from DP operations can be operated upon by WP functions such as format redesign, cut and paste, column movement, column arithmetic operations, repagination, search and replace of phrases, introduction of annotations, updating or revising and automatic checking for spelling.

No Standards

But standing in the way of this integration is the present absence of standards and structure in WP in relation to those that have developed on the DP scene.

For example, there is the issue of the special characters embedded in a text file generated by WP, present to facilitate that document's handling for output. How will DP dispose of such symbols? Then there are simple procedural issues such as the emphasis on the personal files aspect in WP vs. more public file attitudes within DP.

The disciplines of DP must be inserted into the world of WP before a successful marriage can be completed.

In reviewing and analyzing this question of WP and DP integration, an interesting phenomenon comes to the surface.

WP, at the outset and as a goal in itself, was a perfectly good and excellent candidate for a specialized and dedicated computerized function. In fact, if anything, is not WP an example of where software could be eliminated and a hardwired solution would be most applicable?

Nevertheless, having isolated and perfected this application, the next step of the vendors and users was to seek integration with other ongoing activities.

We are now on the threshold of this bringing together. But will the wave of specialization soon overtake us again, break asunder these very same functions and seek their independence once again?

"Not since the early 60's have MIS departments faced such significant changes as those that are about to occur."

E. Drake Lundell, Jr.
Editor of Computerworld

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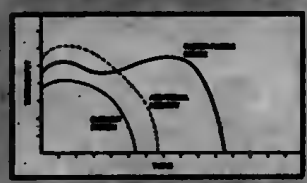

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LETTERS

Out for a Swim

Concerning "Programmers Slammed for not Keeping Up" [CW, Oct. 20], Dr. Richard Hamming, in my opinion, is very narrow minded.

A programmer is like a fish; he will only develop as the environment will allow. That is, if management would provide the software, hardware, vendor education, freedom of mind, adequate development and test time and all other necessary tools, a programmer will only be nonproductive if he was inadequately interviewed before he got the job.

In other words, a nonproductive programmer is just a human being out for a swim, while a productive programmer is like anything else which is suited to its environment.

Peter M. Codispoti
Williamsport, Pa.

Implausible Position

I cannot believe that *Computerworld* would print such an implausible article as "Programmers Slammed For Not Keeping Up."

Dr. Hamming is under a great misunderstanding if he thinks programmers themselves are to blame for not keeping up technologically with their industry.

Most programmers have limited personal time because of the amount of time they must devote to a home or extra hours at work. Also, not until programmers are paid in the professional salary range of $35,000 to $45,000 can anyone expect them to take the time and additional money to keep up with technological advancement.

It would be more realistic for Dr. Hamming to expect employers to reinvest their profits in education of their programmers to make the employee more valuable to his company. This is usually not done because DP departments are more concerned with meeting their deadlines and budgets.

The only realistic way in which a programmer can "keep up," if his employer is not contributing, is for him to change jobs every few years to move with a company that has higher technological opportunities. This very reason is why the average stay of a DP professional is two years.

I thing it would help stabilize the computer profession if "honored software experts" like Hamming would rethink their philosophies of professionalism.

Lawrence E. McCarthy
Joliet, Ill.

Color, Sex and DP?

Black Data Processing Associates? Association of Women in Computing? I never realized color or sex had anything to do with computing.

I am reminded of a costume worn by someone attending the Science Fiction convention in the early '60s. The fellow had blue greasepaint on every exposed square inch of skin and carried a placard proclaiming "Martian Civil Rights."

Maybe he was really from IBM.

E.G. Johnston
Westminster, Md.

Case Dismissed

A recent *Computerworld* article reported a lawsuit brought against my client, Joseph Hershman, by the Leeds & Northrup Co. This lawsuit alleged that my client "maliciously and willfully" deleted a large number of programs from the active files of Leeds & Northrup [CW, Sept. 8].

The institution of this suit was widely publicized in the metropolitan Philadelphia area and in trade journals. The unfortunate aspect of this lawsuit and the attendant publicity is that Hershman was acting to protect Leeds & Northrup as well as himself by attempting to prevent tampering with the computers.

Unfortunately, Leeds & Northrup did not contact Hershman prior to instituting this suit in an attempt to uncover his motivations.

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Finally, I would like to note that the lawsuit filed by Leeds & Northrup against Hershman was dismissed on Oct. 17 by the Honorable Vicent A. Cirillo of the Montgomery County, Pa., Court of Common Pleas. The dismissal included an agreement by Leeds & Northrup and Hershman that his actions were undertaken with no malicious intent and that Leeds & Northrup suffered no compensable damages as a result of Joe's actions.

I hope this letter serves to clear up any misunderstanding or bad impressions that may have been created by the lawsuit and its attendant publicity.

Mark C. Schultz
Norristown, Pa.

Response to Strong

Recently, *Computerworld* has published a series of letters relating to the use of independent consultants. As a national organization representing independent firms, we feel it is necessary to respond to specific points in the letter from Al Strong printed Sept. 29.

To begin with, we agree 100% that whether "freelancer" or any other outside service, the buyer must beware. Throughout our industry there are many truly professional organizations and many others that no one would like to admit exist.

Next, Strong states that independent contractors help cause a high turnover rate at their client companies. The reason given was that employees become "envious of their freelance counterparts who do not put in as many hours, do not have the same career concerns with a job and do not concern themselves with the successful completion of each task. Yet, the employees make half as much money as freelancers."

To begin with, most freelancers put in many more hours than salaried employees. It is true they have different career concerns, but that is a function of deciding to run one's own business.

Finally, to even suggest that they are not concerned with the succesful completion of each task is a slur on the professionalism of our members. Data processing is a very small, tight community. Poor performance cannot be kept a secret for long.

As to income, when you consider the benefits and noncash items that employees receive, there may not be a large difference between their pay and that of a consultant. Remember, the hourly rate that one charges does not go directly to the bank. There are expenses for phone, office, secretarial, legal, accounting and other business functions that an employee never worries about.

Concerning the comment on the inability to get an independent back "during prime shift hours," this can be a concern with independents or contractors.

Obviously, both groups must produce additional business to be successful. Therefore, as much billable time as possible is scheduled.

Knowing many hundreds of consultants across the country, I feel confident in saying that most will do everything in their power to assist a past client who needs help at any given time. More important, this help will be provided without major interruptions in current project work.

Strong stated that the Independent Computer Consultants Association (ICCA) cannot ensure the reliability of a freelancer's product, nor the technical competence of our membership. This is true. It is also true that there is no way to assure the same reliability or competence for any contract service organization. ICCA is taking a step in the direction of providing the community with a means of evaluating reliability and competence based on actual experience.

Steven A. Epner
President
ICCA
St. Louis, Mo.

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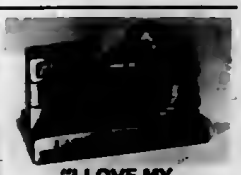

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Deskilling Programming: Management's View

(Continued from Page 49)

cations. Modern fighter aircraft can be maintained by semiskilled mechanics largely because of the "black box" concept. The aircraft is composed of modularized equipments that can be easily removed and replaced. In like manner, the modularized program can be maintained by entry-level programmers because it is well-structured, easily readable and decomposable into "remove and replace" routines.

Documentation is critical to the success of a system over its life cycle. It almost never gets done, especially at the program level. Cobol was once touted as a self-documenting language, but "tricky code" requires elaborate flowcharts, decision tables and so forth to supplement the source code. *Structured* Cobol does eliminate the need for external documentation except for a simple structure chart and some minimal level of descriptive narrative.

If all these benefits accrue from structured methods, why then is there so much controversy? The answer is related to the people who must implement structured methodology and goes far deeper than just resistance to change.

Programmers are, in many respects, a breed apart. They are above average in intelligence, analytical and independent. Being mostly technical types, they are probably less knowledgeable and less concerned about the rest of the organization. Thus, they see their job as an end in itself and often as a source of amusement.

None of this is said in a derogatory sense. Dedication to the craft is an essential element of any technical job. The engineer also engages in "hobby shop" activities. Making work fun is necessary in order to improve the quality of work life and the quantity and quality of production. But the manager who lets these activities go on in an uncontrolled way is serving neither his subordinates nor the organization.

The dichotomy, then, is how to use structured programming to improve productivity while maintaining employee interest and motivation. Structured programming does involve deskilling the programming job. It does involve a lot of mundane work. It will turn off some programmers, even some very good ones.

On the other hand, it will allow a DP department to hire people with just average programming skills. There is a limited supply of super programmers in the world, and they are increasingly expensive and will leave at the drop of a better offer. Less skilled individuals can handle structured programming at far less cost and risk of turnover and still do a creditable job.

There are also benefits for the super programmer. Well-structured programs can substantially reduce the number of late-evening telephone calls so familiar to DP people. The resulting reduction in stress levels can only improve the quality of work life as well as home life.

Motivational Problems

This is not to say that the motivational problems in a structured programming environment will not be serious. The manager must recognize the impact of deskilling on programmers' morale and motivation. How he handles this touchy issue will largely determine the success of any structured methodology program.

One thing the manager must do is understand the real purpose of structured programming — that is, to make people's weaknesses irrelevant. Few people in our society have the IQ to understand a spaghetti-like structure of GOTOs and mutliply-nested IFs. On the other hand, there is a vast pool of talented people who can be very effective in a structured programming shop. Structured programming makes their weaknesses irrelevant to the job to be done.

But what of those high-powered programmers who resent being reduced to the lowest common denominator? One solution is to put them to work in areas where their talents are more useful. Programmers are logical candidates for jobs such as systems design, equipment or software evaluation, data base design, programming supervision, quality assurance and telecommunications. The manager must be alert to these and other career alternatives.

The manager who is convinced of the importance of structured programming must do four things to make it a reality. First, he must announce the decision forcefully so that there is no question as to the corporate direction. Second, he must develop and publish a set of guidelines or standards. Third, he must provide for the necessary training. Finally, he must ensure compliance with the standards while listening to the reasoned arguments of his staff.

Compliance with the standards must be aggressively pursued. During the initial implementation stages, programmers must be closely supervised. This means management must actually read the program.

Structured programming is not the panacea some would like to make it, but the basic principles make good engineering sense. The improvements in productivity will be substantial if the method is properly implemented. Problems in implementation involve primarily human issues, which must be overcome with firm but understanding management.

Durward Jackson is a management and information systems consultant based in Lancaster, Calif.

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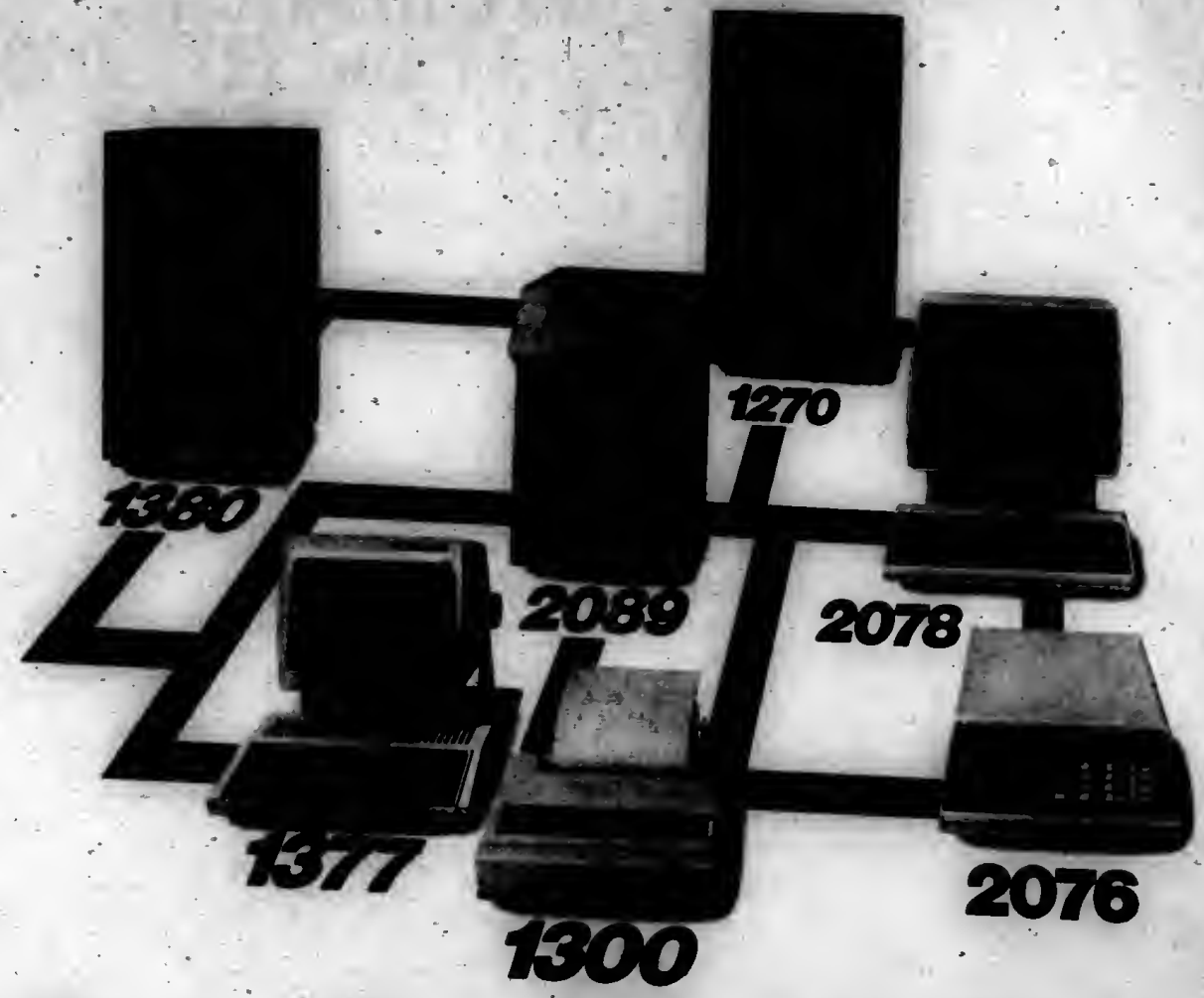

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A DBMS As Witness For Prosecution?

By Rita Shoor
CW Staff

NEW YORK — Company XYZ is being used for an unspecified amount of money by a former employee who has allegedly been hospitalized because of toxic fumes he inhaled while on the job. Chief witness for the plaintiff is company XYZ's hard-working, uncomplaining data base management system (DBMS).

A DBMS as witness for the prosecution?

That's a legal risk that some firms will have to consider when designing data bases in the next decade, according to Dr. Alan Westin, a professor at Columbia University.

The specialist in public law and government used the concept of a DBMS in court in a session entitled "Privacy and Access Issues — On Personnel Data Systems" during the National Conference on Human Resource Management Systems here.

Given the regulations required by such government agencies as the Environmental Protection Administration and Occupational Safety and Health Administration, many firms may be forced to collect increasing amounts of sensitive medical data about employees. Some companies are already combining this information with data about the employees' exposure to possible occupational hazards such as toxic chemicals, Westin said.

(Continued on Page 58)

Built Around Relational Model

'Oracle' a Possible New Breed of DBMS

By Stephen Wright
Special to CW

Webster's dictionary defines an oracle as "any person of great knowledge or wisdom." Oracle also happens to be the name chosen by Relational Software, Inc. for its data base management system (DBMS), and my initial impression after working with it through a CRT terminal was a wish that it had been available in the "old days" — that is, the 1970s.

Developed around a relational model, Oracle offers several features that could be used to identify it as one of a possible new breed of DBMS.

These include:

- Utilization of a common language for most data base interaction instead of the more typical separate languages for end-user queries, data base design and report-generation functions.
- Lack of complicated data structures that the data base user often must deal with and the programmer has to "code around."

Three Components

Written in C, the language developed for Bell Laboratories' Unix operating system, Oracle consists of three major components: the nucleus or Kernel, the Sequel 2 (SQL) language and the data dictionary.

The Kernel is the heart of the Oracle DBMS. It manages SQL and the data dictionary and dynamically maximizes re-use of memory-resident data by controlling all Oracle system buffers. One copy of the Kernel can support multiple data bases in one CPU.

Oracle is not leased on the chain pointers used in a hierarchical DBMS. The elimination of pointers provides the potential for improved performance and increased flexibility in defining new data relationships. Compressed indices help cut down the processing needed to add or delete a record because there is less data to process. This processing tends to be a problem in some other inverted list systems, but it is the price that often must be paid for added flexibility.

Touted as a relational data base management system, Oracle was introduced to the end-user market several months ago [CW, June 30]. Wright, a consultant with Arthur D. Little, Inc. in San Francisco, recently put Oracle through its paces on a Digital Equipment Corp. VAX-11/780 supermini; this is his description and evaluation of the software.

Data security and integrity are ensured via two software commands. GRANT allows a table owner to extend access to his data to other users. TRIGGER allows an update in one table to initiate a corresponding update in another table, if desired by the table owner.

Oracle also includes a multithread access feature that provides support for multiple simultaneous updates and queries against the data base. I/O operations can be overlapped up to the hardware limit.

SQL, the data base interaction language, was originally developed by IBM as the high-level interface for that vendor's yet-to-be-released System R. It allows the user to describe his request to the Oracle system with little difficulty and is especially easy to learn for those people having prior experience with National CSS, Inc.'s Nomad system.

SQL is a nonprocedural language, which means that you tell the system what you

(Continued on Page 62)

'Relational' a Relative Concept

By Rita Shoor
CW Staff

"Relational" — like beauty — is a concept that is defined in the mind of the beholder.

If the beholder is a satisfied end user, it probably doesn't matter if the relational data base management system (DBMS) utilizes a physically relational data structure or the more common hierarchical, networking and inverted list structures.

That point was made by Stephen Wright, a consultant with Arthur D. Little, Inc., when he was specifically asked whether he would describe Relational Software, Inc.'s Oracle as a relational DBMS (see related article).

"One school of thought holds that a relational system is one which physically relates everything [each piece of data] to everything else," he explained. "There is nothing like that now."

However, there is another school of thought which states that if the data appears to the perceptions of the user in a relational manner, then from a practical standpoint, it is a relational DBMS, Wright maintained.

And, does Oracle fulfill this definition?

At least one user, who wished to retain his anonymity, felt that it did. Oracle allows the data to be normalized and presented in two-dimensional tabular form — an easier concept for the programmer to grasp than other data structures, according to the shy source. "This allows us to cut down on the requirement for the analysts to interact with the programmers," he said.

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11/80

Legal Hazards of Data Base Design Previewed

(Continued from Page 57)

One factor that management must keep in mind when coordinating this information in a data base is controlling access to extremely sensitive medical information about things like sexual performance, he continued.

Tort Law Concepts

Another possibility is that present tort law concepts provide a plaintiff with the capacity for charging the company with "minute-by-minute knowledge" of when things began to happen in a tort claim action against a firm with this type of data base, according to Westin. "The data base can be subpoenaed."

Westin felt that this connection between issues of privacy and broader business trends such as "management recognition of positive employee dissent" marked another change in the pattern between individual privacy and computer systems that began to evolve nearly 30 years ago.

"During the late '50s and early '60s," he recalled, "there was a complete fascination with computer systems. Everyone's attention was on getting the systems up and reducing processing costs." The focus at this time was on the positive aspects of computer productivity. The potential effect of computer systems on individual privacy was getting very little attention, he said.

Sometime between 1964 and 1969 came the period of what Westin described as "early alarms." Books like Vance Packard's *Naked Society* contained chapters on computer data banks and referred to "the electronic goldfish age." The idea that machines would dominate decision making was prevalent and people assumed that anything that a computer could "possibly do" it would "inevitably do."

In the business world, Westin said, the first payroll systems were functioning and statistical reporting efforts had been successful. The integration of all information known about an employee to aid in manpower planning and government regulatory reporting was the next area of concentration — in essence, the concept of a data base.

The era from 1968 through 1974 was one of "empirical investigation," he continued. Both government commissions and private groups were studying the effect of the computer on business systems.

Results of these studies led to the conclusion that, contrary to earlier opinions, computerization didn't inevitably lead to "knowing everything about people" — mostly because the cost was too high. Instead, automation was leading to the creation of data files that included only the most frequently used information about an employee.

Westin maintained that these commissions found that it was the company's policy about letting people have access to their own files was the real area of importance — rather than the fact that the system had been computerized.

New concepts that emerged during this period of empirical investigation included the application of fair information practices to the area of credit reporting. The Fair Credit Reporting Act which went into effect in 1970 was "an excellent first shot," Westin said, in providing the individual with some control over information that had been gathered about him.

Privacy Consideration

The fourth phase extended from 1974 to the present and may be considered the period of the first major legal intervention and interpretation regarding an individual's right to privacy, he said.

The Privacy Act of 1974 applied fair information practices to the government sector. A Privacy Protection Study Commission was formed in 1977 to determine which areas of information access should be subject to government legislation and which should be left to voluntary regulation within the private sector, Westin explained.

During this same time period, companies like IBM and Bank of America appointed task forces to determine the rules of confidentiality and access that should be included in voluntary privacy regulation, he said.

More than 50 large firms have joined in this voluntary effort. Combined with a "dramatic change in [company] attitude" from the 1930s, 1940s and 1950s, when it was an accepted practice to perform an extensive screening on a prospective employee's political loyalty, sexual role and life-style, these task forces have made top management in these firms feel "pretty clean" about their information-handling practices, Westin said.

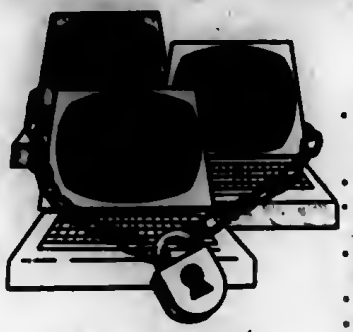
Ironically, he pointed out, because these firms have become more responsive to employee needs and safety requirements, they've moved from collecting information about morals, politics and life-style to collecting extensive medical and economic data — areas of equal sensitivity.

Therefore, as the decade closed, approximately 50% of the Fortune 500 firms have to take a "very close look at their files," Westin maintained.

He speculated that the focus on privacy in the next decade would shift to methods for handling legitimately collected but sensitive information.

He also predicted a debate over federal vs. state privacy legislation that would continue growing over the next 10 years, but felt that federal legislation would not be enacted for at least five more years.

Looking For A Way To Unlock Your Programmer Productivity?



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A Foreign Oil Company
We evaluated the competition and chose ACEP.

An Oil Company
ACEP supplies our remote users a time sharing capability under CICS/VS.

A Major New York Bank
ACEP is very powerful for the systems programmer.
Our service has been very responsive.

A Theater and Distribution Co.
We have installed and used three different systems. ACEP is the best I have ever worked with.
We have always been able to do exactly what we wanted. ACEP imposes no restrictions on us.
ACEP installs quickly and easily.

A Major Manufacturer
We spent many years looking for a system. We evaluated many products before choosing ACEP. It is one of the cleanest systems I have worked with.
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Keyvest Provides Portfolio Management

DENVER — A portfolio management system designed to provide investment decision-making reports has been released here by Keyvest, Inc.

Income statements, cash flows, realized capital gains and transactions histories are included in reports provided by the system, according to a company representative.

Keyvest's system reportedly features institution reports that embrace the investment philosophy defined by the particular institution. "Categorization of risks and returns or diversification schemes are solely a matter of top management's objectives, policies and controls [with this system]," a spokesman claimed.

In order to achieve transportability, he continued, hardware-independent random-access methods as well as standard Ansi Cobol statements and symbolic JCL are used throughout the system.

The system provides more than 90 investor and management reports that are designed to fit one standard 120-char. form. This allows for a reduction in the costs tied to the initial forms purchase as well as their storage and movement, he claimed.

In addition to offering a Keyvest system license, the firm provides the following alternatives for potential customers:

- A service bureau. Keyvest handles input, processing and output and provides clerical assistance as required.
- A software service. Keyvest runs the system on an IBM 3033 via a General Electric Information Service Co. Terminet hook-up. The customer controls data entry, verification and report distribution.

Available immediately, the software license costs approximately $50,000. Prices for operating the system as a service are variable with the primary determinants being: number of accounts, number of assets, number of assets per account, number of transactions per day, number of pages printed and frequency of processing, a spokesman explained.

Keyvest is located at Sakura Square, Plaza Level, 1215 19th St., Denver, Colo. 80202.

Package Aids Headhunters

MARINA DEL REY, Calif. — Mini-Systems Associates, a technical placement firm, has announced a software package that reportedly enables firms to find the right DP or engineering professional for their needs.

Search, written in Basic for the IBM 5110 or 5120, can be used to find contractors and permanent employees, according to the vendor.

Potential candidates are classified by background and areas of expertise. Requirements for a specific job are keypunched and a printout appears listing those people most qualified.

The package carries a license fee of $2,500. The firm is located at 634 Venice Blvd., Marina Del Rey, Calif. 90291.

Order Modules Run on PDP-11

NORWALK, Conn. — A series of modular software programs that automate all aspects of order processing, inventory control and accounting for any type of manufacturer has been announced by Remote Business Services, Inc.

Written in Dibol, the programs are designed for use on any Digital Equipment Corp. PDP-11 minicomputer system operating under the CTS300 or CTS500 (RSTS) operating systems.

Each package is written so that it may be used stand-alone or interactive with other modules.

System prices are: bill of material, $5,000; material requirements planning, $7,500; order entry/billing/inventory/purchasing, $7,500; and accounts receivable/sales analysis, $2,500. Source code is provided.

The programs are supported on a direct dialup basis through remote diagnostics. A trial or demo plan is offered via remote terminals.

The firm is located at 9 Bettswood Road, Norwalk, Conn. 06851.

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Application Software Three-Pack Joins Science Management's 'BAS'

RIVERDALE, Md. — Science Management Corp. has unveiled three application software packages that run as part of its Business Application Software (BAS) under the Idol data base management system.

The Wholesale Distribution System, the Construction System and Insurance Agency Production System are operational on the Basic Four Corp., Rexon Business Machines, Inc., IBM Series/1, Texas Instruments, Inc. TI 990, Pertec Computer Corp. PCC200 and Onyx Systems, Inc. computers.

The Wholesale Distribution System is designed to process order entry, inventory control, sales analysis, accounts receivable and payable, general ledger, payroll and purchase orders. It costs between $12,000 and $20,000, depending on the number of modules desired.

The Construction System was created to process accounts payable, payroll, job cost (work in process) and general ledger functions. It costs between $14,000 and $22,000, depending on the number of modules desired.

The Insurance Agency Production System combines accounting, rating and word processing cost reduction programs. It costs between $14,000 and $17,000 depending on the number of modules desired, the vendor said from 5711 Sarvis Ave., Riverdale, Md., 20840.

'TDP/3000' Lets HP 3000s Process Text, Documents

PALO ALTO, Calif. — Hewlett-Packard Co. has announced that its HP 3000s can now do text editing and document processing, as well as DP.

Using HP terminals and HP 3000 Series 30, 33 or III computers, according to the vendor, the firm's TDP/3000 text and document processing software adds a command-driven word processing system to the computer's DP capabilities.

TDP/3000 is said to offer such editing capabilities as adding, deleting, modifying or rearranging all or part of a document. The package reportedly provides extensive formatting capabilities for the creation of letters, multicolumn reports, tables, form letters and other special document needs.

The first copy of the TDP/3000 is $6,000, with each additional copy costing $3,600. Customer service support costs $60/mo from 1501 Page Mill Road, Palo Alto, Calif. 94304.

WP Aid Made For Blis/Cobol

ORLANDO, Fla. — The Center for Cobol Software, Inc. is offering a word processing (WP) package in Cobol that is compatible with Blis/Cobol operating systems executing on Data General Corp., Ampex Corp., Point 4 Data Corp. and other DG-compatible minicomputers.

The system is available in either object or source programs and is reportedly easy to learn for nonprogramming personnel.

It costs $2,500, the vendor said from Suite 207, 5104 N. Orange Blossom Trail, Orlando, Fla. 32804.

Applying Yourself?

Have you been applying yourself to purchased software this year? *Computerworld* is interested in hearing about your experiences with applications packages for a forthcoming Special Report.

CW's readers want to know the special considerations involved when interfacing these packages with various data base management systems; what to do when an applications package almost — but not quite — fits your needs; and any other factors that affect buying and implementing applications software.

Typed, double-spaced manuscripts no longer than five or six pages should be sent by Dec. 12 to Rita Shoor, Senior Editor/Software and Services, *Computerworld*, 375 Cochituate Road, Rt. 30, Framingham, Mass. 01701.

Offices Get Mail System

CAMBRIDGE, Mass. — Information Data Search, Inc., a business research service, has introduced IDS/Mailbox, an electronic mail system that allows users to receive research material through an office terminal.

Designed for the user who needs information quickly or who does not have access to major libraries or information centers, IDS/Mailbox is said to send and receive messages of any size and shape.

With no monthly charges, clients pay a one-time application fee of $25, plus computer time. There is no minimum required usage.

The firm is located at Suite 2A, 1105 Massachusetts Ave., Cambridge, Mass. 02138.

Datapoint 1500 Gets Ansi Fortran

SAN ANTONIO, Texas — Datapoint Corp. is offering Ansi Fortran for the firm's 1500 dispersed processors.

Datapoint's version of the language is said to meet all Ansi X3.9-1966 standards less complex data type and includes several extensions that improve programmer productivity.

Datapoint Fortran can run on any 1500 processor with 60K bytes of main memory using the DOS.H operating system.

Datapoint Fortran costs $500 for the initial licensing fee plus a $10 monthly maintenance fee, the vendor explained.

Datapoint is headquartered at 9725 Data Point Drive, San Antonio, Texas 78284.

CICS, Copics Security Aided

SAN JOSE, Calif. — A software package that provides security for IBM's CICS transactions and Copics functions is available from Scott-Kennard & Associates, Inc.

The User Profile-Security Utility (Upsu) was designed to work as a front end with the IBM Copics software programs and serves as a security monitor for all CICS transactions.

Features include verification of passwork and log-on, verification of secured transactions and verification authorization at the transaction level.

Upsu costs $5,000.

The vendor can be reached through P.O. Box 23839, San Jose, Calif. 95123.

Axxess 'Aims' Academic System At Prime 500, 1000, 5000 User

MOUNTAINSIDE, N.J. — An administrative and academic system for higher educational institutions is available from Axxess Information Systems, Inc.

The Academic Institution Management System (Aims) serves up to 63 on-line display terminals simultaneously. The software runs on Prime Computer, Inc. 500, 1000 and 5000 minicomputer systems.

Academic processing needs covered by the system include registration, fund raising and financial tracking and reporting, among others, the vendor claimed.

The price for the system ranges between $65,000 and $82,500, depending on the number of modules desired, the vendor said from Suite 102, 200 Sheffield St., Mountainside, N.J. 07092.

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Productivity through better software is what NCSC is all about. Contact any one of our offices to obtain more information and to schedule an installation in your operation. NCSC headquarters are located at 6517 Everglades Drive, Richmond, Virginia 23225. Call us in Richmond at 804/276-9200, Telex 82 83 94, New Jersey 201/460-8888, Chicago 312/635-6310, Dallas 214/247-2004, Los Angeles 714/634-0733.

Nixdorf Computer Software Company

NIXDORF COMPUTER

'Oracle' DBMS A New Breed

(Continued from Page 57)

want done rather than how to do it. The following example illustrates the commands required to raise the salary of employee No. 1552 to $22,000.

```
UPDATE EMPLOYEE
SET SALARY = 22000
WHERE EMPNO = 1552
/
```

(EMPLOYEE is the assigned table name. The "/" ends the set of commands.)

All of these commands would be entered after the user received an SQL prompt, which positions the cursor on the CRT screen. Note that the data base structure is hidden from the user. He has no idea of how the Oracle data is internally stored.

Because SQL functions as the data definition language, the report writer and the programming sublanguage, staff members are, in effect, able to produce reports, program Oracle commands in Cobol application programs and describe various data bases once they have mastered writing queries.

Oracle's data dictionary is, perhaps, most comparable to Cullinane Corp.'s integrated data dictionary. Tight control is provided by the fact that all data managed by Oracle must be defined in the data dictionary. In fact, the system won't run without it.

Data dictionary maintenance is simplified by access time binding, which means that the data description is attached to the application program at execution time. This also allows unauthorized programs to be locked out.

As is the case with all new products, the Oracle system cannot be regarded as complete. For example, there isn't a high-speed loader to allow for the rapid creation of large data bases — a feature which is a requirement for users with a large volume of data.

Announcing a $15-million investment in application packages for IDMS Database Users.

Cullinane Corporation recently raised $15,000,000 to invest in application packages for IDMS users; the first such effort in the history of the software business. It is the intent of the Cullinane Corporation to provide a comprehensive library of application packages to its IDMS user base. We feel this is the ultimate productivity tool whereby the application is already built for the IDMS user. In addition, these will be integrated applications which "speak to each other" and take advantage of the various IDMS tools, such as OnLine English, to make the application data available to the end user. The first available application is the Customer Information System (CIS), for banks. The CIS is a proven, high-performance system, capable of supporting multiple banks.

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Database: Cullinane

TSO User's Terminal Acts as Braegen Console

CUPERTINO, Calif. — A software package that reportedly substitutes the IBM Time Sharing Option (TSO) user's CRT terminal for a console in Braegen Corp. multitask terminal systems has been announced by the company. Opcon package thus reportedly allows users to enter console commands from their terminals. The operator console buffer is displayed at the CRT terminal, where TSO and system commands can then be entered.

A table allowing only authorized users to enter commands is included in the package. Furthermore, only commands specifically assigned to the user can be entered into a particular console.

In addition, local card readers and printers attached up to 7,500 ft from the host can be controlled with a CRT terminal running Opcon. Opcon is free to users of the firm's multitask terminal system. Braegen is at 20740 Valley Green Drive, Cupertino, Calif. 95014.

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'Demon' Exercises Harris Minis

FT. LAUDERDALE, Fla. — A multiprogramming operating system that reportedly exercises CPU, memory and peripheral equipment in a manner similar to the conditions created by actual user programs is available from Harris Corp. for its 80, 100, 500 and 800 computer systems.

The Diagnostic Environment Monitor (Demon) creates a realistic testing environment and increases the probability that potential hardware problems will be identified before they affect user operations, the vendor claimed.

The product also tests the operating system for reliability during program execution.

Each Demon module contains verification sequences that reduce the probability of executing lengthy code sequences after illogical operations or other failures, a spokesman said.

Demon is a no-charge addition to the above-mentioned Harris systems, the vendor said from 2101 W. Cyprus Creek Road, Fort Lauderdale, Fla. 33309.

SPSS Release 9 Features Statistics, Graphics Tools

CHICAGO — SPSS, Inc. is offering Release 9 of its SPSS Batch System. The release features three statistical procedures: Manova, Box-Jenkins and enhanced regression, and a graphics option.

Manova is a general linear models procedure for univariate and multivariate analysis of variance and covariance and multiple and multivariate regression, as well as related multivariate techniques.

Box-Jenkins is a procedure designed to aid in the analysis of univariate time series data.

The regression procedure features five equation-building methods including forward entry, backward elimination, stepwise selection, forced entry and forced removal.

The system licenses for $6,000 the first year and $3,000 each successive year. Discounts are available for nonprofit and academic sites, the vendor said from 444 N. Michigan Ave., Chicago, Ill. 60611.

Micro Notes

Data Master redefines file layouts, merges and subdivides files, subdivides records and modifies fields on Apple Computer, Inc.'s Apple II. Price: $100. Vendor: High Technology, Inc., 8001 N. Classen Blvd., P.O. Box 14665, Oklahoma City, Okla. 73113.

Record Manager allows users of Apple Computer, Inc.'s Apple II to commit complete files into memory to access records. It requires Applesoft in read-only memory, 48K bytes of random-access memory. Price: $35. Vendor: Connecticut Information System Co., 218 Huntington Road, Bridgeport, Conn. 06606.

Menumanager monitors food costs, predicts sales trends and calculates a restaurant's estimated profits on the North Star Computer, Inc. Horizon system. Price: $595. Vendor: Microsource, Inc., 1425 W. 12th Place, Tempe, Ariz. 85281.

Newdos/80 is an upward enhancement for the Radio Shack TRS-80 which reportedly expands that system's capabilities to mix or match disk drives and improve security. Price: $149. Vendor: Apparat, Inc., 4401 S. Tamarac Pkwy., Denver, Colo. 80237.

Microbench 6809 is a family of software packages that operate in conjunction with Digital Equipment Corp.'s LSI-11 to provide program development capability for the Motorola 6809. Microbench Z8000 is another series of programs to support applications development for the Zilog, Inc. Z8000. Price of perpetual license fees: $1,695. Vendor: Virtual System, Inc., No. 406, 1500 Newell Ave., Walnut Creek, Calif. 94596.

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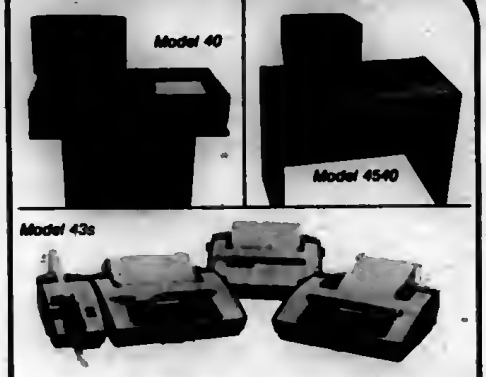

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The Gravy Train Derails

By Charlene Franci
And W. Thomas Lin

Programmers continue to be overly concerned with salary as a work motivator and are completely unaware of the coming modification to their function. The end of the line is in sight.

The dramatic emergence of the computer in the past 25 years has been hailed as the beginning of the second Industrial Revolution — an era in which the computer will revolutionize the office much as power machinery drastically altered the operation of the factory. Today, the computer is both an important tool for management and a significant factor in the nation's economy.

The importance of programming in the current state of computer refinement cannot be underestimated. In the early days of computing, the major problems facing the industry were concomitants of the equipment; that is, design, fabrication and maintenance. Today these problems have been reduced largely by manufacturing and engineering improvements. Errors that can be traced to machine malfunction are rare.

On the other hand, the problems of programming and programming design are the major stumbling blocks to the real payoff in the use of computers. Too often, user departments request services from the DP department and are delivered products that bear little resemblance to those actually requested or needed.

The proper role of the programmer is unclear in the rapidly changing technological environment. The once-agreed-upon traditional role — that of a coder of computer programs — is being eroded.

Responsibility for correctly installing a user's request is shifting gradually into the area of the user environment. More and more application products provide sophisticated processing capabilities requiring little or no technical knowledge of DP to install, maintain and enhance. These turnkey systems have diminished greatly the importance of the programmer as the person who talks to the electronic brain and replaced it with a genuine concern as to the continued viability of this occupation in the emerging era of power for the user by the user.

The major purpose of this article is to examine and evaluate the present and future roles of programmers and their motivational factors. Specifically, a recent study by the authors assessed the major motivational factors of programmers and examined their views about their future roles. Programmers were defined as those individuals who possess technical DP knowledge and perform the function of coding programs. Technological developments were defined as all hardware and software products relating to the processing of requests for computer-generated information.

Programmer's Present Role

One of the difficulties immediately encountered in discussing the programmer is the lack of a uniform description of the programming function. Robert Ledley has described the programmer's role as the utilization of techniques and methods to translate

(Continued on In Depth/2)

IN DEPTH

(Continued from In Depth/1)
the verbal, mathematical or other description of a computational problem into a list of instructions that will direct the computer to perform successfully the required computation[1].

Peter Drucker feels that computer programming is merely semiskilled work, requiring only a knowledge of junior high school arithmetic, three months of training and six months of practice[2]. He qualifies his assessment by saying that while the skill may not be an elevated one, it is based on knowledge rather than manual training or experience.

In practice, the current role of the programmer is simply that of a program coder who translates specifications into notation that can be interpreted and executed by the computer. The programmer receives these specifications from a systems analyst.

The work actually performed by the programmer involves interpretation of the programming specifications generally attended by discussion with the systems analyst for clarification of the documentation. The programmer has few options to take or choices to make since the analyst usually will determine the action to be taken for such considerations as input and output file storage media, file organization, logarithmic calculations and report layouts.

The primary area in which the programmer exercises a degree of originality and creativity is in the optimization of program code; within the program itself, the programmer is free to manipulate the data being processed as he sees fit. In addition, the programmer usually writes the job control language, which is the mechanism enabling the computer to read and process the actual program.

Motivational References

The DP profession, now more than 25 years old, is gradually assuming some of the behavioral problems characteristic of older disciplines such as accounting and engineering.

Abraham Maslow explained in 1954 how employee needs exist in a hierarchy. "Lower level" needs, explained as physiological and safety needs, must be satisfied before the higher ones, social and esteem needs, begin to work as motivators[3].

During the 1960s, Frederick Herzberg directed a motivational research project which led to his now popular two-factor theory of motivation[4]. This theory suggests that the basic motivational elements can be split into two categories labeled "hygienes" or "dissatisfiers" and "motivators" or "satisfiers."

Herzberg identified 10 hygienes: achievement, recognition, work itself, responsibility, advancement, company policy and administration, technical supervision, salary, interpersonal relationships with superiors and peers and working conditions. These, he said, are aspects of the job which must be maintained at an essentially positive level before motivation can flourish.

In DP literature, discussion of motivational factors affecting systems analysts and programmers has concentrated on salary, state-of-the-art equipment and user contact.

Effect on Salaries

Among programmers, a certain mystique is attached to the very human activity of computer programming. One of the corollaries of this mystique is that high salaries must be paid.

In a survey by Jac Fitz-enz, salary ranked 10th in importance among factors that really motivate DP employees[5]. Fitz-enz compared his results with those for employees in other fields as reported by Herzberg. Herzberg found salary ranking ninth. Both researchers found other rewards, including achievement and personal growth, to be more important.

It is commonly thought that younger DP professionals place more emphasis on salary, while older ones value fringe benefits more highly. However, the Fitz-enz survey revealed a surprising lack of correlation between compensation categories and employee characteristics. It was expected that base pay amount would be negatively correlated with age — that is, the younger a person, the more he desires salary-wise and the less he values fringe benefits. The survey response was just the opposite; the amount desired in base pay had insignificant correlation with level of education, and it was not correlated with sex, job title

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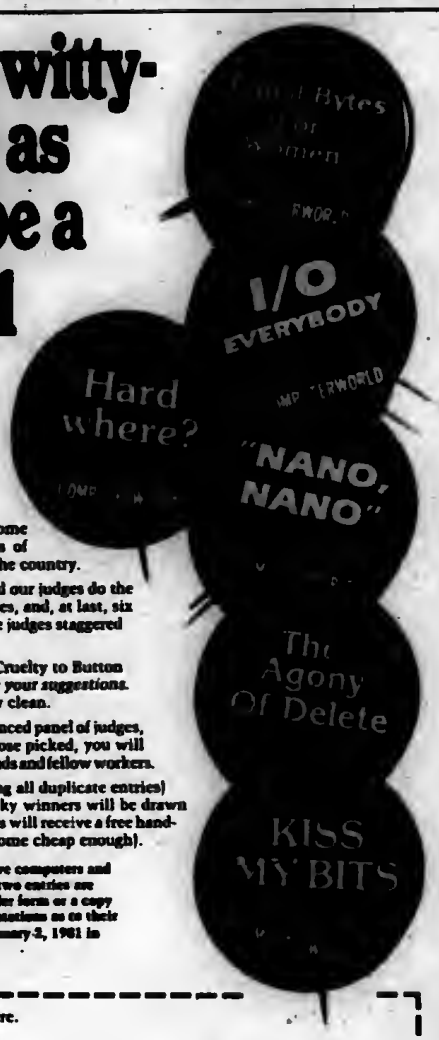

As all you button freaks know, *Computerworld* buttons have become a tradition in the industry. And every year we distribute tens of thousands of them at NCC, Info, and other trade shows across the country.

Last year, for the first time, we let our readers do the writing, and our judges do the laughing. We spent many hours sifting through hundreds of entries, and, at last, six winners (shown above) emerged from the smoke-filled room. The judges staggered out later.

This year, despite protests from the SPCBJ (Society to Prevent Cruelty to Button Judges), we've decided to do it again. And we're hereby *soliciting your suggestions.* They should be *short,* funny, relevant — and at least moderately clean.

As many as six suggestions will be chosen by our (by now) experienced panel of judges, based on criteria known only to them. If your entry is among those picked, you will receive a certificate of appreciation suitable for impressing your friends and fellow workers.

In addition, all the people who submit winning entries (including all duplicate entries) will be thrown into a hat (at least their entries will) and six lucky winners will be drawn more or less at random (we never promised fair). These lucky souls will receive a free hand-held computer game valued at well under $100 (if we can find some cheap enough).

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(programmer, programmer/analyst) or industry.

This finding makes sense in light of what Maslow has said about human nature. Since DP employees tend to be on a rather high pay scale compared with the general populace, it might be expected that money would be less motivating for them.

State-of-the-Art Equipment

DP professionals are different from other professionals in that they have a higher need for personal growth and development. They respond more positively to jobs high in motivating potential than do people with low needs; state-of-the-art equipment and products are key motivators.

Computer product manufacturers are introducing faster hardware and more powerful software, and users of these products eagerly line up to purchase them. It is a fact of life that DP managers whose installations have the newest tools for the programmer to work with can more easily attract and retain talented personnel.

Programmers regard these new products as toys, and they relish the challenge of embracing and mastering these tools. They eagerly seek projects involving terminals with more processing functions, higher readability targets, new software extensions and, of course, the newest technology. They cannot afford to let their skills atrophy or stagnate lest they become unmarketable.

J. Daniel Couger indicated that the experience with the latest terminal, data base or operating system is necessary to the programmer's professional career requirements and also satisfies personal motivation needs. Programmers, he found, have a strong need for personal accomplishment, for learning and developing beyond their present status and for being stimulated and challenged[4].

User Contact

A widely discussed topic concerns who has responsibility for making decisions on a computer system project — the user or the DP department or a combination of the two.

Most authors indicate that the user is responsible for controlling and defining a project. Users need to participate in decisions so that DP personnel do not dictate what is best for a system.

Users feel that programmers do not understand their problems, are not sensitive to their requirements and cannot give them the responses and services they would like.

Peter Schoderbek and James Babcock conducted a poll of 200 of the Fortune 500 companies. The 1969 study examined the organizational location of the DP department within a company, the reporting authority of the department and the degree of line management involvement.

The researchers dealt with the potential repercussions when a programmer makes too many decisions. Decisions made by computer personnel that affect operating personnel, but which reduce their role to that of mere spectators, will not win general acceptance, they noted. The criticism frequently leveled at DP staff — that they lack an awareness of operating realities — may carry considerable weight, thus further reducing their effectiveness for implementing changes, they said[5].

The majority of writers concluded that it is the users' responsibility to ensure that a project is designed and implemented to suit their needs. The programmer is responsible for providing what is requested in terms of a computer system that is understandable to the user.

Future Role

The evolution of the computer industry has proceeded fairly rapidly. The '60s were dominated by large centralized systems and satellite stations that were, for the most part, independent. In the '70s, rising costs and increasing systems overhead brought about the use of small, intelligent computer systems — many of which were linked in a distributed processing fashion.

The 1980s, however, will unveil a different type of computing from that of the previous two decades. During the next 10 years, computers will evolve into utilities consisting of a number of specialized modes and terminals.

The programming of computer applications is about to turn a corner. The function of application programming

(Continued on In Depth/4)

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IN DEPTH

(Continued from In Depth/3)

will be obsoleted by technology. Even today, more and more "user" or nonprogrammer-oriented languages are appearing on the market.

The user is gaining closer proximity with the computer and the trend is toward removing the middlemen — the programmers.

DP tools are being put in the hands of the users who will control the resources for getting their data processing work done.

Hardware manufacturers have realized the days of just pushing hardware are coming to an end and are beginning to rush toward the end user. Canned programs and improvements in hardware are combining to contribute to the "clericalization" of programming.

Programmers are adept at what they do, but they do not attempt — or know how — to really communicate with users and understand their problems. Too often, the wrong problems get solved. Programmers are not seeking the kind of interaction that user-oriented applications packages are imposing and will not readily take to the possible assimilation of their job function into the user environment.

While DPers are formally educated in technical subjects, they do not take courses in interpersonal relationships and communication. Many computer science courses still are more machine- than business applications-oriented. Programmers with a marginal appreciation of business are hurting themselves.

The potential impact of change is worth noting and has been explored by many writers. Individuals' inability to grow and direct change in their lives is a major problem. One of the truly ironic consequences of automation is the attitude of those programmers who believe that technological developments will lead to their own employment. Programmers who feel that clerical personnel should not object to being replaced by computers are quite vocal when they think their own jobs are in jeopardy.

Users will continue to gain sophistication as the embers of the DP mystique fade. Removal of this mystique will, of necessity, open up the communications channels between DP and users. The user who understands the application together with the computer will program cost-effective software because technology will have eliminated the need for the programmer. The user will no longer need to rely on DP personnel to program routine information requests.

An article by Ann Dooley predicted that within the next five years, the computer industry will begin to see the demise of the programmer — that high priest who understands the machine but not the application. In the next quarter of a century, the programmer function will no longer exist except in research and in analog-to-digital conversion[2].

Concerned professionals must use the change to their advantage. Programmers who do not move into user types of functions will become significantly less secure. Those with aptitude, a solid business background and good interpersonal skills will slowly

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slip out of the profession. For those who remain strictly technical and continue to concentrate only on mastering improved coding techniques, only highly routinized jobs will remain.

There will always be a programmer in the marketplace; but in the future, most programmers will be involved in writing the software tools, not in actual applications programs.

The authors conducted a questionnaire study in the fall of 1979 to obtain information regarding the motivational preferences of programmers, their perceptions of future modifications in programmers' functions and their attitudes toward technological developments as they relate to their work.

Population Surveyed

The population was drawn from companies in a variety of manufacturing and financial businesses in the Los Angeles area. This geographic region was selected as being representative because of the large number of installations in the area and its similarity to other metropolitan markets for DP services. The study expressly excluded computer service bureaus and software vendors who provide computer support to outside companies, because programmer positions in such firms are very different from in-house DP groups in larger, non-DP businesses.

Out of 80 questionnaires distributed, 50 were returned. The respondents were asked to distribute 100 points over eight factors, indicating the relative importance of these factors as related to their jobs. They also answered questions concerning their perceptions of the technological developments in DP and their awareness of the changing job scene for programmers. In addition, background information was requested concerning the respondents' age and education.

A summary of the mean values of the eight motivational preference factors is presented in the table on the following page. It shows that salary and oportunity for advancement are the most important motivational factors for the sample programmers. The results of t-tests show the mean value for salary preference is significantly greater than that of state-of-the-art preference and heavy user contact preference.

This is in contradiction to the literature which indicated that programmers do not regard salary as a primary motivator when compared with other rewards such as personal growth and achievement.

One possible interpretation relates to the current high inflation rate. The only way to keep ahead of inflation has been to change employers frequently in order to get a higher salary. In the DP industry, job-hopping is an acceptable practice since employers are desperate to find even marginally talented individuals.

Isolationist Attitude

The isolationist attitude of the programmer is reflected in the resoundingly low assessment of user contact. A Pearson's correlation coefficient of the sample data shows that preference for user contact bears no relationship to the length of a programmer's education, and the importance of the user contact factor is minimal. In other words, the programmer views his profession as involving one-to-one communication with the computer, while users represent an alien element not capable of such privileged communication.

This elitist attitude was supported by the literature and indicates a lack of perception regarding skills mandatory in light of the present role modification. The aversion to working with other individuals represents a significant obstacle to the programmer who desires to remain a viable professional entity.

The survey respondents did indicate their swareness of the significance of experience with the most technologically current products. The state-of-the-art equipment assumed greater importance as the length of the individuals' education increased, which was supportive of that position put forth in the literature — technical aspects of the profession are emphasized in the educational process.

The attitude expressed by the survey respondents was that the technical aspects of their functions could never be replaced by technological developments in hardware or software. Contrary to the literature, the respondents

(Continued on In Depth/6)

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IN DEPTH

(Continued from In Depth/5)

felt that the programming function would always exist and that the user population would never achieve the level of communication required for direct interaction with the computer.

A chi-square analysis by age group revealed that the younger programmers were significantly more positive in their attitudes toward technological developments relating to the profession than those over the age of 39. This finding is supported by the literature which highlights the automator's fear of being automated.

Finally, in spite of the ever-increasing amount of published material heralding the drastic modification or obsolescence of the programming function, none of the survey respondents expressed any comprehension of this situation.

Summary

Historically, computers and automation conjure images of job elimination or job modification. This article has examined the relationship between technological development in DP pertinent to modification of the traditional programming function and programmer attitude toward these developments. Specifically, programmer opinions were solicited regarding motivational preferences and perceptions concerning the current and future roles of the programmer as they relate to the trend towards placement of computing power directly into the hands of the user.

The survey results clearly indicated that the programmers were heavily preoccupied with salary as a motivational preference. They placed minimal emphasis on other attributes which would enhance their promotability. Although the opportunity for advancement was also of significant concern to them, they placed little importance on being technologically current and on having user communication skills, both of which are factors that enhance programmers' professional viability, promotibility and, as a result, salary.

In addition, the programmers did not express any awareness regarding the coming modification of their role and felt that technological developments in DP would never enable user department personnel to communicate intelligently and directly with the computer.

Because of the relative newness of computer programming when compared with other occupations in business organizations, the role of the programmer has not always been clearly defined.

The survey results indicated that the literature to date concerning motivators for the non-DP work force cannot consistently be applied to programmers.

Furthermore, the traditional programming role as it is known today will no longer exist in the future and this segment of the working population must be prepared for the imminent redefinition of its role.

A thorough understanding of the roles as well as the needs and goals of programmers is important and will require more investigation and research.

Preference Factor	Mean Value	Rank
Salary	23.84	1
Opportunity for Advancement	20.44	2
Job Security	11.88	3
Systems Development Work	10.68	4
State-of-the-Art Equipment	9.16	5
Company Reputation	8.64	6
Office Location	8.18	7
Heavy User Contact	7.28	8

Programmer's Motivational Preference Factors (Sample Mean Values)

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A Look at CICS/VS 1.5

By Mark W. Greenberger

The newest release of IBM's CICS/-VS, 1.5, looks very exciting because of its new functions and enhancements made to existing functions. The highlights of the release are:

1. Multiregion operation.
2. Enhanced intersystem communication.
3. New device support.
4. Enhanced high-level language interface.
5. New security features.
6. Additional monitoring capabilities.
7. New user exit interface.
8. New master terminal functions.

This article describes the highlights in detail and the impact they will have on the CICS/VS systems programmer and his installation. The information is based upon currently available IBM documentation. No guarantee can be given that the features will be implemented as described.

Multiregion Operation

Multiregion operation (MRO) provides a CICS/VS installation with a number of options in configuring its CICS/VS systems. It is no longer necessary to allocate terminals based on application use. Instead, an installation can now allocate all the terminals to one CICS/VS system and dedicate other CICS/VS jobs to distinct applications. Each application system can have its own CICS/VS system with the terminal CICS/VS system doing all the routing necessary to ship the transaction to the proper CICS/VS region.

This capability wasn't previously available on Btam CICS/VS systems. Even in a Vtam CICS/VS system, where this capability is currently available through Vtam, MRO provides an advantage in that the terminal operator doesn't have to log off and log on to the various CICS/VS application systems. The terminal operator perceives the multiple CICS/VS region's address spaces as a single system image and does not realize that his request was processed by more than one CICS/VS system.

The method used to implement MRO is operating system dependent. In MVS environments, the operating system's common service area (CSA) is used to move the data from one address space to another. An SRB is created to move the data from the CSA to the target address space.

In DOS/VSE and OS/VS1 environments, an SVC is used to move the data from one partition to another and a cross-partition post is utilized to signal the receiving partition that it has data to process.

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The resources that can be shared by multiple CICS/VS systems include terminals, files, transactions, DCT and TST entries, DL1 data bases and CICS/VS management modules. All the CICS/VS systems have to reside in the same CPU. The three functions available with MRO are:

1. Transaction routing.
2. Function shipping.
3. Management module sharing.

Transaction Routing

Transaction routing allows a terminal operator connected to one CICS/VS region to run transactions in any other connected CICS/VS region. Transaction routing is accomplished through a CICS/VS-provided "relay" program that routes the transaction to the proper CICS/VS system. CICS/VS will determine, through the PCT, if the transaction is to be attached locally or routed to another CICS/VS system. If the transaction is defined as a "remote" transaction, CICS/VS will use the "relay" program to route the transaction to the proper system and wait for a reply from that system. When the transaction is received by the connected system, it will be attached by CICS to the corresponding TCTTE defined as a remote TCTTE.

When the transaction finishes processing and writes a message to the terminal, CICS/VS ZCP will recognize that the TCTTE is a remote TCTTE and route the message to the originating CICS/VS system, which is waiting for this reply, and will write the message to the real terminal.

Transaction routing is available for macro and command-level programs since CICS/VS provides all logic necessary for routing in its management modules. A comparison between a single CICS/VS system and multiple CICS/VS systems utilizing transaction routing is shown in Figure 1 here.

Function Shipping

The function shipping facility just introduced with MRO is analogous to the function shipping facility available with Intersystem Communication (ISC) in CICS/VS 1.4. Function shipping allows a CICS/VS command-level program executing in one CICS/-VS region to access resources residing in another CICS/VS region. ISC function shipping permits the second CICS/VS region to reside in a remote CPU, while MRO function shipping requires that both CICS/VS regions reside in the same CPU.

When function shipping is utilized by a command-level program, it is transparent to the application program. This is true for ISC and MRO function shipping.

The Exec Interface Program (EIP) re-

(Continued on In Depth/8)

TRANSACTION ROUTING

	SINGLE CICS	TERM CICS	APPL CICS
RECEIVE TRANSACTION	X	X	
ATTACH RELAY		X	
TRANSFORM REQUEST		X	
TRANSMIT REQUEST		X	
RECEIVE REQUEST			X
TRANSFORM REQUEST			X
ATTACH TRANSACTION	X		X
EXECUTE TRANSACTION	X		X
TERMINATE TRANSACTION	X		X
TRANSFORM REPLY			X
TRANSMIT REPLY			X
RECEIVE REPLY		X	
TRANSFORM REPLY		X	
SEND REPLY (TERMINAL WRITE)	X	X	
TERMINATE RELAY		X	

Figure 1

GLOSSARY OF TERMS

SRB: Service Request Block. A control block used by the MVS operating system to initiate a unit of work in another address space.
SVC: Supervisor Call. The mechanism used by programs to request a service from the operating system.
DCT: Destination Control Table. Used by CICS to route information to logical destinations.
TST: Temporary Storage Table. Used by CICS to determine which temporary storage identifiers to recover after a system Abend.
PCT: Program Control Table. Used by CICS' Task Control program to validate transaction identifiers.
TCTTE: Terminal Control Table Terminal Entry. Used by CICS to describe the physical terminal which is connected to CICS. It also contains various control pointers which are used by CICS' Terminal Control Program.
ZCP: Vtam Terminal Control Program. This program is used by CICS to communicate with Vtam.
ELR: Exec Local/Remote Routine. This routine is used by the CICS Exec-level interface program to determine if the required resource is local or remote.
FCT: File Control Table. This table is used to describe the data sets accessed by the CICS application programs through the File Control Program.
EIB: Exec Interface Block. Used as an interface between an Exec-level CICS application program and the CICS Exec interface program.
FDP: Field-Developed Program. Any program which was developed by an IBM user and which is being marketed by IBM.
WTOR: Write to Operator with Reply. The method used by an application program to communicate with the console operator.
CSMT: The Transaction Identifier for the CICS-provided Master Terminal Operator functions.
BMS: Basic Mapping Support. The mechanism used by CICS to insulate the application program from the characteristics of the terminal hardware.
PTF: Program Temporary Fix. The method used by IBM to supply corrections to its software before the modification is incorporated in a new version.
RACF: Resource Access Control Facility. A security package for the MVS environment being marketed by IBM.
PPT: Processing Program Table. Its purpose is to identify application programs to CICS' Program Control Program.
SIT: System Initialization Table. This table is used by CICS Initialization programs to identify the various options and program versions to be used for this execution of CICS.
PLT: Program List Table. Used by CICS System Initialization Program to determine which application programs are to receive control before polling of the network begins.
PAII: Performance Analyzer II. A CICS performance monitor package marketed by IBM.

IN DEPTH

(Continued from In Depth/7)

ceives control from the application program after a CICS/VS command has been executed. EIP uses DFHELR, in conjunction with the applicable CICS/VS table, to determine if the resource resides in the same CICS/VS system or in a different (remote) CICS/VS system.

The method used to send the request to the other CICS/VS system, if the resource doesn't reside in the local system, will be different for ISC and MRO. Both will utilize ZCP to ship the request to the other CICS/VS system. The Intersystem Program (ISP) will determine if intersystem communication or interregion communication should be utilized to ship the request.

An ISC or MRO function shipping request has to go through the same transformations before the request can be processed. The only difference between an ISC and an MRO function shipping request is the method used by CICS/VS to get the request to the other CICS/VS system: ISC uses Vtam and MRO uses an SRB or SVC.

MRO function shipping ensures less overhead than ISC function shipping if both CICS/VS systems are executing on the same CPU.

Module Sharing

The process of running multiple copies of CICS/VS systems in the same CPU has been made more efficient in CICS/VS 1.5 by allowing most CICS/VS management modules to reside in the OS Link Pack Area (LPA) or DOS Shared Virtual Area (SVA). This allows multiple CICS/VS regions to use the same version of CICS/VS management modules instead of each region having its own private copy of them. This ability will decrease the working set requirements of the multiple CICS/VS regions (which can significantly reduce paging) and also ensure storage protection for the CICS/VS nucleus.

Each CICS/VS region will be able to control which of its management modules should be placed in the LPA/SVA and whether it wants to use a management module already in the LPA/SVA.

As usual, the CICS/VS management modules will be suffixable to allow multiple versions of the same management module to reside in the LPA/SVA at the same time. This feature will affect any user mods that overlay management module code or CSA entry point addresses.

Intersystem Communication

ISC was first introduced in CICS/VS 1.4. It allows transactions to access resources residing in the CICS/VS systems. The application program requesting the resource is not cognizant of where the resource actually resides. CICS/VS logic, in conjunction with its tables, determines if the resource is on the local system or on a remote system. The request or function is shipped to the proper system, hence the term "function shipping."

The CICS/VS 1.5 enhancement to ISC allows a CICS transaction to communicate to another CICS task executing in another CICS/VS system. Any part of a transaction's logic can be removed from the local system and moved to a remote system where it is executed. When the remote transaction has completed processing, it can send the reply to the portion of the transaction's logic executing in the local system.

This facility is called distributed transaction processing, since a transaction's processing logic is distributed across multiple systems. Before discussing the advantages and disadvantages of function shipping and distributed transaction processing, let's take a look at an example that highlights the difference between them.

A transaction, Tran, is executing on the local system and requires that the master file be accessed multiple times. The program issues a file control re-

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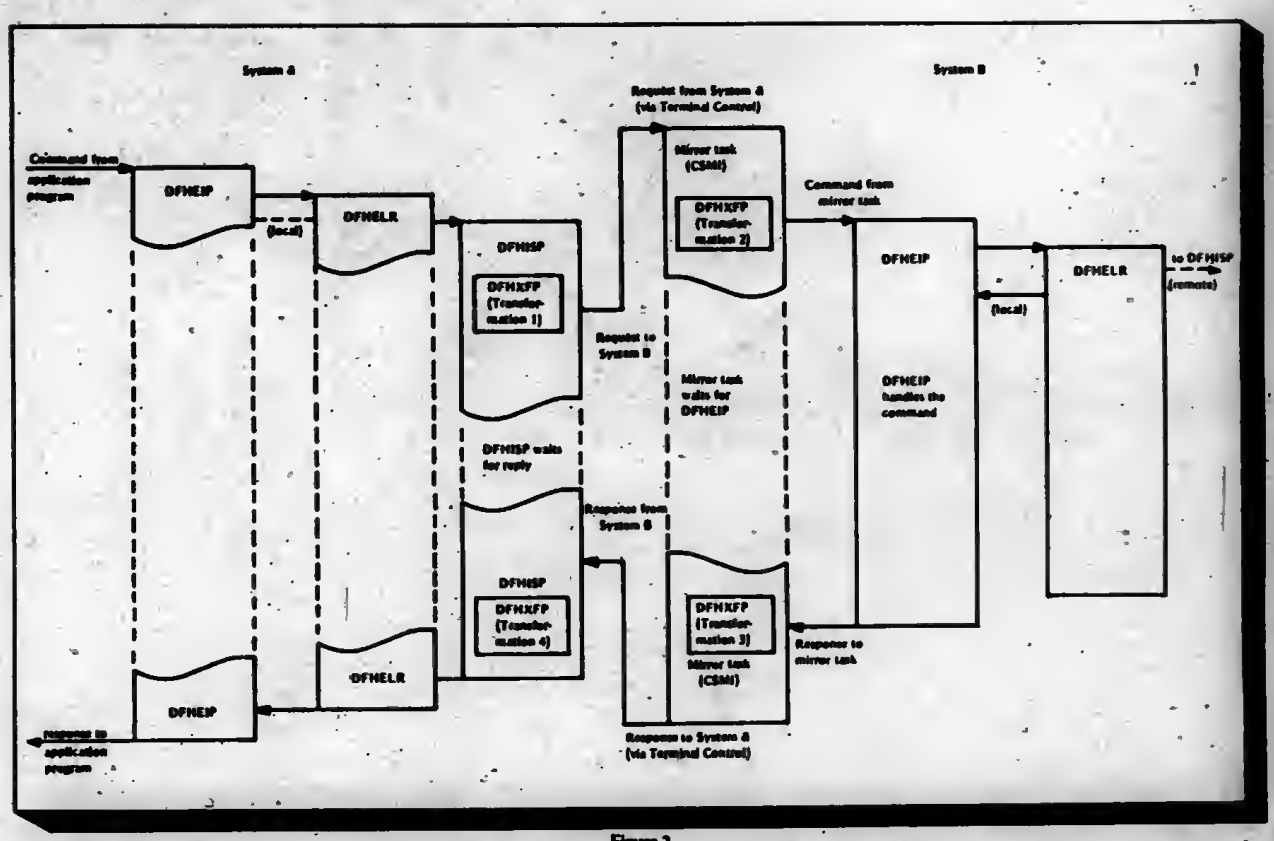

Figure 2

quest to read the file. EIP receives control when the request is issued, since the application program is written using the CICS/VS command-level interface.

EIP passes control over to ELR to determine if the master file is on the local system. If the FCT indicates that it is a local file, control is returned to EIP to issue the file control request to the file control program.

If the master file isn't on the local system, control is passed to the intersystem program (ISP). ISP transforms the request into a format suitable for transmission to the remote system.

ISP requests ZCP to send the request to the remote system and puts the transaction into a wait, until a reply is received from the remote system. The master file definition in the FCT on the local system tells ISP the name of the remote system where this file resides. When the request is received on the remote system, a "mirror" transaction is initiated through ZCP which transforms the request back to a format that can be used to issue the file control request.

Again, EIP receives control when the request is issued and uses ELR to determine where the master file resides. In this case, the file resides on the same system and there is no need to route the request to another system. After EIP issues the file control request and it is satisfied, control is returned to the mirror transaction. The mirror transaction transforms the reply into a format suitable for transmission back to the requesting system. After sending the reply back to the requesting system, the mirror transaction terminates.

When the reply is received in the originating system, ZCP gives control back to the Tran transaction which is waiting in ISP. Before returning control to the application program, ISP transforms the reply into the format expected by the application program (that is, error codes go into the EIB and the record is moved into the area specified by the application program). The application program isn't aware that the request was executed on a remote system. This process is repeated for every file control request on the master file (see Figure 2).

Programmer's Alternative

Distributed transaction processing provides the application programmer with an alternative to the above scenario. Instead of shipping each file control request to the remote system, the application programmer can divide the transaction's logic into two separate transactions — one executing on the local system and one on the remote system.

The transaction executing on the local system would ship a request over to the remote system when it reaches the point in its processing where it is necessary to access the master file. The request shipped over to the remote system would tell CICS/VS to initiate a transaction to execute on that system. The transaction to be initiated would

(Continued on In Depth/10)

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IN DEPTH

ISC vs. MRO	ISC VTAM	IRC MRO
CICS FUNCTION SHIPPING	1.4	1.5
USER FUNCTION SHIPPING – TRANS. TO TRANS. – DIST. TRANS. PROC.	1.5	X
TERMINAL SHARING – TRANS. ROUTING	X	1.5

Figure 3

(Continued from In Depth/9)
be the second half of the original Tran transaction.

This part of the transaction would issue all the file control requests necessary to complete its processing. When the second half of the transaction finishes on the remote system, it sends a reply to the first half of the transaction, which is waiting for the reply.

The shipping of the request to and from the remote system utilizes ISP and ZCP just as function shipping does. But instead of shipping multiple requests back and forth, only one request is shipped, to initiate a transaction, and one reply is received from the remote system.

No Program Changes

The advantage of function shipping over distributed transaction processing is that it requires no application program changes. The application program doesn't know on which system the resource resides, and it can be changed without its knowledge.

The big problem with function shipping is that there can be very heavy usage of the link between the CICS/VS systems, which can create performance problems. This bottleneck is alleviated with distributed transaction processing, because the number of requests going between the CICS/VS systems is reduced. The designer of an application system has more flexibility in designing a system utilizing distributed transaction processing, but more interaction between the systems programmer and the application designer is required.

Another drawback to distributed transaction processing is that it can't be utilized on current applications since the application programs have to be cognizant of where the resources reside.

A new control block, the Status Information Block (SIB), was introduced in conjunction with distributed transaction processing. This control block can be accessed by an application program to determine the status of the link between the CICS/VS systems and the current conversation. Figure 3 highlights the functions available with ISC and MRO.

The other enhancement to ISC incorporates the features available with the new version of ACF/Vtam Release 2. The new release provides the capability for multiple sessions to be active concurrently between two applications (LU TYPE 6). The CICS/VS systems programmer can define the maximum number of parallel sessions that can be active. This feature should alleviate some of the performance problems that can be encountered using ISC function shipping.

New Device Support

CICS/VS 1.5 also provides:

1. OS/VS console support.
2. Network terminal option.
3. Additional 3270 support.

The OS/VS console can now be supported as a CICS/VS terminal. The system console was supported as a CICS/VS terminal in previous releases of CICS/VS, but only in a DOS/VS environment. An FDP was available for OS/VS environments which provided this support. The console will be supported as a card reader-line printer (CRLP) terminal. This support will be generated automatically in Terminal Control.

An installation will have the choice of supporting the console, as a terminal, through an outstanding WTOR or

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through a MODIFY command. With a MODIFY command, there is no need to have an outstanding WTOR to gain access to the system.

An installation will also have the option of generating a specific TCTTE for each console to be supported or use one generic console TCTTE to support many consoles. If the installation wants automatic transaction initiation (ATI) to be available for the consoles, it will have to generate a specific TCTTE for every console that is to be ATI eligible. ATI will not be available for consoles supported through the generic console TCTTE.

Most installations will welcome the OS/VS console support because it makes it easier to manage multiple CICS/VS systems. It will no longer be necessary for an installation to have a dedicated 3270 terminal as a master terminal for every CICS/VS system. Instead, an installation will be able to manage the multiple CICS/VS systems through the system console.

The system console will not replace a dedicated 3270 terminal because it can not accept a formatted 3270 screen. Through the use of the CSMT transaction, which is terminal independent, the console operator will be able to manage the CICS/VS systems. A CICS/Vtam installation will be able to use the same console (terminal) to enter both CICS and Vtam commands.

Network Terminal Option

Although Vtam always supported TWX devices in "basic" mode, the CICS/VS Vtam interface did not support this mode. The lack of CICS/VS Vtam support for TWX devices has always been an obstacle for an installation trying to convert its Btam network to Vtam.

With the inclusion of CICS/VS Vtam support of the Network Terminal Option (NTO) facility, this obstacle has been removed.

NTO supports a start-stop TWX device and converts the data stream to 3767 LU Type 1 protocol. This allows the CICS/VS Vtam interface to communicate with a TWX as though it were a Systems Network Architecture (SNA) device. This support will also be available to the IBM TWX-compatible terminal, the 3101.

NTO is a program product that resides in the 3705 and performs the conversion of the TWX data stream to a 3767 data stream. One problem with the NTO interface is that it does not support auto-call. This lack of support for auto-call might be an obstacle to an installation converting from a CICS/VS Btam to a CICS/VS Vtam system.

Additional 3270 Support

The additional 3270 support announced for CICS/VS 1.5 includes the 10/63 magnetic stripe which can be used to initiate a transaction or to provide data as input to a transaction. BMS support has been extended to allow the use of multiple 3270 screen sizes, while remaining independent of screen width.

CICS/VS 1.5 will also support the 3279 color CRT terminal. The four base colors — red, green, blue and white — as well as the three extended colors — yellow, turquoise and pink — are supported. All forms of 3279 highlighting, blinking, underlining and reverse video are supported. These features are available on a character or field basis.

In its continuing effort to make life easier for the high-level language application programmer, CICS/VS 1.5 will have an interpreter to facilitate the interactive development of CICS/VS commands. The interpreter will check the syntax of a command as it is entered and notify the programmer if there are any errors. In addition to checking the syntax, it will also tell the programmer if there are any missing parameters and the default options that were taken.

After the interpreter has checked the command, the programmer can request that his command be executed. The results are displayed on the screen in the same format that is available with the Execution Diagnostic Facility (EDF). The command interpreter will be supported only on a 1,920-character, or larger, 3270 screen.

New Security Features

Security enhancements that were previously announced for CICS/VS 1.4.1, and were available for CICS/VS 1.4.0 via a PTF, are included in CICS/VS 1.5. These enhancements include

(Continued on In Depth/14)

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IN DEPTH

CLASS 2 ACCOUNTING DATA

- task identification
- terminal identification
- operator identification
- transaction type
- # of transactions
- # of failing transactions
- # of input messages
- user count

is collected for each transaction

CLASS 3 PERFORMANCE DATA

- Data includes for each task
  - transaction elapsed time
  - transaction dispatched time
  - transaction real CPU time
  - wait times for I/O completion
- Data includes for the system
  - user dispatched time
  - KC dispatched time
  - TC dispatched time
  - JC dispatched time
  - user, KC, JC CPU time
  - wait time
  - page ins/page outs

CLASS 4 DETAILED EXCEPTION DATA

Data collection will include

- wait for string
- wait for shared buffer
- wait for temporary storage
- wait for SOS
- ISAM overflow

Figure 4

(Continued from In Depth/11)
nondisplay of the password during sign-on and the ability to log all sign-ons and sign-offs.

A new interface to an external security manager has been introduced for CICS/VS 1.5. The interface has a macro, DFHSEC, which gives the user the ability to verify an operator's authority to access a resource. For MVS installations, the interface was designed to use RACF as the external security manager. CICS/VS-provided transactions for ISC, EDF and the new command interpreter have the ability to interface with RACF.

A new monitoring and data-gathering mechanism was introduced for CICS/VS 1.5. The new mechanism will be utilized to capture data for performance tuning as well as the regular accounting data. The accounting data was available in previous releases, but will now be integrated with the other data being captured.

One big drawback is the lack of off-line data analysis and reporting programs. It is the installation's responsibility to provide them. Since Performance Analyzer II (PAII) is the base for this new facility, look for PAII analysis programs for a comprehensive set of analysis and report programs. This support could become available in a PTF or future release.

The data to be captured by this new facility can be classified as follows:

- Class 0 — Basic system management data.
- Class 1 — System managment data.
- Class 2 — Accounting data.
- Class 3 — Performance data.
- Class 4 — Detailed exception data.
- Class 5 — Trace data (AUX TRACE).

Classes 0, 1 and 5 were available in prior releases of CICS/VS. Classes 2, 3 and 4 are new and are summarized in Figure 4 above.

The method to be used for recording the new data differs from OS to DOS installations. OS installations will have the option of using the SMF data sets to record the data as type 110 records. DOS installations will have to utilize CICS/VS Journal Control.

A special journal entry will have to be dedicated for this purpose. These new records will not be compatible with regular journal records, because they will not have a journal label record or a journal header record. This was done, perhaps, to make the source of this data transparent to analysis programs. The accounting data will be written at user-specified intervals, but the performance and exception data will be written when the buffer is full.

The user will be able to control the capturing of the data with the DFHTR macro. Each class of data will be controllable by the macro. This also implies that the user will be able to record his own performance and statistical data.

Those installations that use the trace program's CSA entry point, CSATRNAC, and expect it to point to the trace programs are in for a surprise. The entry point for the trace program will be in the CSA Optional Features List and CSATRNAC will now point to the new monitoring facility program. A new table, the Monitoring Control Table (MCT), will control the various aspects of the new monitoring facility.

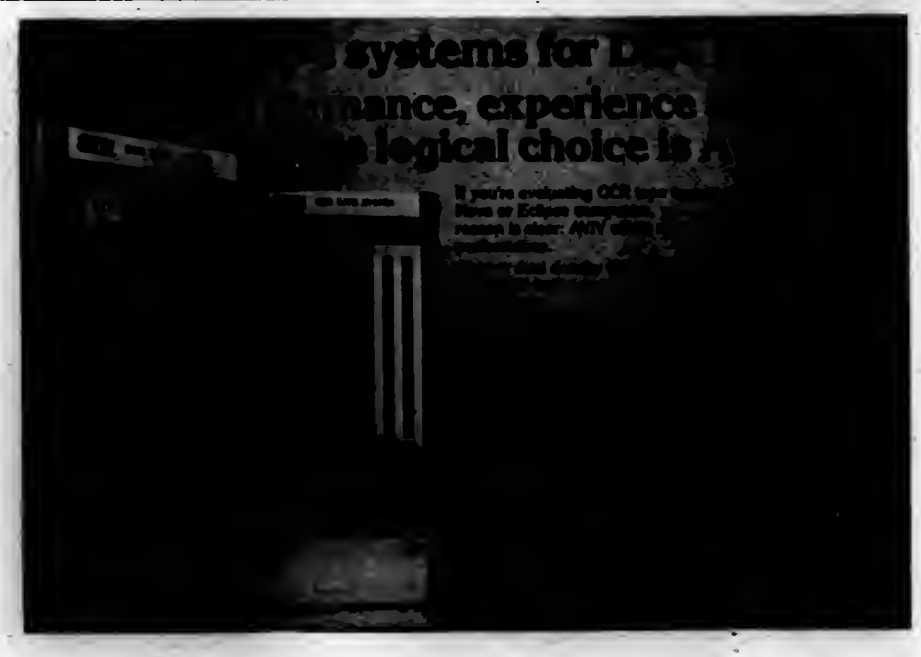
User Exit Interface

The new user exit interface announced for CICS/VS 1.5 allows an installation to incorporate user exits into CICS/VS management modules without reassembling the modules. This means that an installation can use most of the pregenerated modules when installing a new version of CICS/VS or applying a PTF. The new user exit interface can coexist with previous exit routines incorporated into management modules.

Instead of assembling the exit routine with the CICS/VS management module, the new interface requires them to be in a separate program. Each of these user exit programs requires a PPT entry, but one program can contain multiple exit routines. In addition, each exit point can have multiple exit routines and one exit routine can be used by multiple exit points.

When an exit routine receives control from a CICS/VS management module, it will pass a parameter list which will contain an exit number, among other parameters. This exit number identifies the particular exit point that invoked the routine.

A new user exit interface became necessary with the introduction of MRO, which allows CICS/VS management modules to reside in the LPA/SVA. An installation could have a potential integrity exposure if user code were assembled with the CICS/VS management module and were allowed to re-



side in LPA. The new interface, in conjunction with MRO, allows the management module to reside in LPA and the exit routine to remain in the CICS/VS region. The management module's registers are saved and restored by the exit interface.

An exit manager and table have been added to CICS/VS to support the new exit interface. This manager is automatically generated with CICS/VS, and a new SIT keyword, EXIT=YES/NO, specifies whether the exit manager and table should be loaded. The individual exit routines can be activated only after PLT processing has completed.

A new command is available to command level programs to control the processing of these exits. The five functions of the new command are:

1) Enable.
2) Activate.
3) Disable.
4) Deactivate.
5) Extract.

The ENABLE command makes an exit program available for the one or more exits contained within. The ACTIVATE command makes an exit active for a specific exit point. The DISABLE and DEACTIVATE commands are the reverse of the ENABLE and ACTIVATE commands.

The EXTRACT command makes available to the requesting task the address and length of the work area that was obtained when an exit program was ENABLED. Multiple exit routines in multiple exit programs can be active for any exit point. Each of the exit routines will be called in the order of their activation.

This capability will benefit installations that have program products that utilize exits and conflict with the installation's own exit routines. The new interface will enhance the module sharing capability of MRO by allowing multiple CICS/VS systems with different exit routines to share the same module.

Master Terminal Functions

A new master terminal transaction, CEMT, is introduced in CICS/VS 1.5. The new transaction is keyword-oriented and the keyword abbreviations actually make sense. The CEMT transaction will be supported for the system console and the 3270-2 or larger terminal.

All new master terminal functions that will be necessary to support new facilities in CICS/VS will be incorporated in the CEMT transaction only. The CSMT transaction will not be enhanced and will only support its current functions.

The two basic CEMT commands are SET and INQ. SET is used to modify the status of a resource or set of resources, and INQ limits the user to inquiries. The big advantage with CEMT over CSMT is its ability to inquire or modify the status of a generic group of resources.

An asterisk (*) is used to denote the end of the generic name and a plus (+) is used as a substitution character. Thus, PROG (AB*) identifies the group of programs that begin with the characters AB, regardless of their actual length. TRANSID (X++A) identifies all those transactions that begin with the character X and end with A, no matter what the two middle characters are.

More Usable

With the release of this version of CICS/VS, IBM is serving notice on the CICS/VS community that it will keep on enhancing CICS/VS and making it more usable. The introduction of MRO is the most exciting function announced with this release. This capability should benefit most installations which run a minimum of two copies of CICS/VS, a test and production version.

It also seems that IBM is trying to encourage installations to split their CICS/VS applications into multiple jobs for better performance and integrity. It is too early to judge whether performance will benefit from this approach since little is known about MRO overhead.

The usability of CICS/VS has also been enhanced with this release. The new user exit interface, master terminal transaction and support for the OS/VS system console will be greatly appreciated by system programmers and the operations staff. These functions will also make MRO easier to implement and use.

(Continued on In Depth/16)

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IN DEPTH

(Continued from In Depth/15)

The new monitoring facility is everything you always wanted to know about CICS/VS in the way of statistics and performance. Let's hope that off-line analysis and report programs are not long in coming.

IBM also seems to be going after the CICS/VS software market by incorporating many of its functions and facilities into CICS/VS. CICS/VS 1.5 will obsolete program products and FDPs such as Peer Address Space, OS console support and PAII.

The only area not successfully addressed by CICS/VS 1.5 is security. The user is still left to his own devices. RACF is not viewed as a realistic CICS security solution by most MVS installations, as discussed at the last Guide meeting. Furthermore, it was not designed with the intent of protecting on-line systems, whose special security needs cannot be satisfied by interfacing with a batch security system.

The enhancements to ISC will make CICS/VS a viable program product for distributed processing. With the recent announcement of ISC support in IMS, CICS-to-IMS communication is finally a reality. Maybe now the IMS development team will stop working on IMS/DC and use CICS/VS as its data communications vehicle.

The new command interpreter is not really very useful since the command still has to be entered into a program, which leaves room for error. Look for a further enhancement to the command interpreter which will contain a user-oriented language.

Finally, this author waits anxiously for the day when multiple operating system CICS/VS tasks will be able to run in the same address space/region. This capability will provide for enhanced multitasking without most of the overhead incurred in the current implementations (ISC and MRO). This capability will also allow CICS/-VS to handle its own page faults.

This approach was made possible when the CICS/VS management modules were rewritten for placement in the LPA/SVA. A module has to be reentrant before it can be placed in the LPA/SVA.

Mark W. Greenberger is a systems consultant for On-Line Software International, where he is primarily involved in CICS systems support and performance tuning.

Formerly he was the senior systems analyst for Con Edison in charge of CICS technical support.

Greenberger holds an M.S. degree in computer science from City College in New York.

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Dial Backup — Part 2

Net Failures Remedied Automatically

By Barney L. Dewey
Special to CW

Circuit failures in a data network can bollix an organization's operations at great economic cost.

To avoid this situation, an automatic dial-backup configuration,

Dial backup for both point-to-point and multipoint systems is inexpensive, practical and effective in substantially reducing leased circuit downtime, a senior applications engineer for Codex Corp. contends in the final part of this two-part series.

as shown in Figure 1, requires the computer center to have a pair of data telephones with an RJ-455 modular telephone jack as well as a modem with a registered telephone interface and dial/leased line switch.

This is the same equipment for the computer center as used in the manual system previously described [CW, Nov. 3]. The following equipment is required at the remote site. Either:

- A point-to-point modem.
- A pair of dial telephone lines with an RJ-455 modular telephone jack — telephone instruments are not required; if they are provided, they must be set for data set controlling the line.
- A registered interface for the above dial lines.
- A dial backup automatic answer unit (DBAAU).

Or:

- A modem with a built-in automatic dial backup interface.
- A pair of dial telephone lines with an RJ-455 modular telephone jack. Telephone instruments are not required.

With automatic answer systems all functions at the remote location are automatic, requiring no operator action. Operator action is necessary at the central site.

Because we are backing up a 4-wire full-duplex circuit, we must use two dial connections. One dial connection will carry data from the central location (Transmit Data). The other will pass data from the remote site to the central site (Receive Data).

The two connections become

(Continued on Page 71)

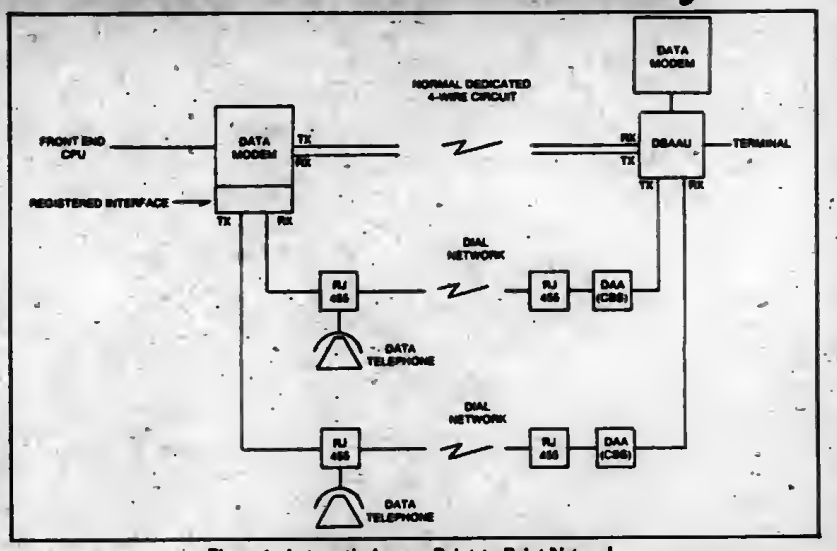

Figure 1: Automatic Answer Point-to-Point Network

Net Flexibility Improved

Node Bypass Hikes Throughput

MARINA DEL RAY, Calif. — Node bypassing, an alternative form of network configuration that is said to increase network throughput and flexibility without adding to cost, is being offered to Tran Telecommunications Corp. digital network users.

Geared to work with Tran M3200 integrated networks, the bypass architecture allows each multiplexer or network access concentrator in a switched network to have one or two trunks tied directly to other multiplexers.

The feature also permits having one or two trunks tied to network processor nodes, a spokesman said. The result is that dedicated traffic — synchronous or asynchronous — passes over the mux-to-mux links, while switched traffic goes through the network processors.

In effect, node bypassing lets the user overlay a point-to-point network on top of a switched network to share the same hardware, without losing the advantages of integrated networking, the spokesman added.

Large Network Use

The architecture technique has been used before in large networks such as Canada's Datroute — which stretches coast-to-coast more than 3,000 miles. But in Tran's application, the bypassing technique is applied to high-volume local networks.

The bypassing feature is designed to be used for dedicated links in a switched digital network or in any local environment.

The node bypassing option is offered as a no-charge software conversion for Tran M3200 users.

Additional information on the architecture can be obtained from the communications company at 2500 Walnut Ave., Marina Del Ray, Calif.

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Option Added To Diablo 3000

SUNNYVALE, Calif. — Xerox Corp. has announced an option to the Diablo 3000 small business system that allows use of data communications and up to four additional terminals or printers.

Both daisywheel and matrix Diablo printers can be used and each terminal/printer port is individually selectable as either an RS-232C or current loop under program control.

Software to support the new release is also available.

Prices will be determined by Xerox distributors, a spokesman said, from 701 S. Aviation Blvd., El Segundo, Calif. 90245.

CRT Emulates NCR Terminals

LOS ANGELES — A CRT terminal that is a plug-compatible replacement for the NCR Corp. 796-301 and 796-101 terminals is available from Informer, Inc.

The D304-N is a desktop model with a standard data entry keyboard configuration. An executive-style walnut version, the I304-N, is also available. It has the keyboard located in a pullout drawer.

The D304-N weighs 40 lb less and costs $1,000 less than the NCR 796-301 series, the vendor claimed.

The D304-N costs $2,600 and the I304-N, $2,295, the vendor said from 8332 Osage Ave., Los Angeles, Calif. 90045.

Store-and-Forward Receiver Out

COSTA MESA, Calif. — A data communications receiver with store-and-forward capability has been introduced by MSI Data Corp.

Designed as an interface between MSI's portable data entry terminals and a host computer, the 2732-S reportedly will allow organizations that previously had to use a separate IBM disk reader to now link their computers directly to the receiver's bisynchronous port when reading stored data.

Based on the MSI/2732 transmission converter/receiver, the 2732-S costs $1,000 more than the older model. A one-disk system is priced at $9,000; a two-disk system at $10,000; one with three disks at $13,000; and one with four at $14,000.

The firm is located at 340 Fischer Ave., Costa Mesa, Calif. 92626.

Concentrator for Terminal Clusters Allows Mix of Univac Devices

LOS ALTOS HILLS, Calif. — A port concentrator for terminal clusters designed expressly for use with Univac computers is available from Kaufman Research Manufacturing, Inc.

The Model 871 True Port Concentrator is said to allow free interfacing with a mix of terminals of various speeds, including hard copy and CRT terminal devices.

Data rates of the terminals can range from 110- to 19,200 bit/sec, and communication with the Univac system is via Univac UTS 400 protocol.

For non-Univac terminals, the Model 871 provides the necessary display and formatting control functions to make the terminal behave and display information as if it were a Univac.

The unit comes with one line interface module and costs $4,765 from the firm at 14100 Donelson Place, Los Altos Hills, Calif. 94022.

Data Set Suited For 28-Mile Run

SAN JOSE, Calif. — Anderson Jacobson, Inc. has unveiled a short-range asynchronous point-to-point data set.

The AJ 1050 short-haul data set transmits digital data up to 28 miles over dedicated, paired wire unloaded lines without telephones, the vendor claimed. Transmission speed ranges up to 9,600 bit/sec.

The product is suited for data transmission within self-contained facilities or building complexes such as colleges or military installations.

Modular add-on options include TTY interface, EIA port expansion, ac power control, multiple transmitters in a polled environment and a housing that will accommodate a second card.

The unit is priced at $330, the vendor said from 521 Charcot Ave., San Jose, Calif. 95131.

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Teleray Replaces VT100

MINNEAPOLIS — Teleray Division of Research, Inc. has unveiled a terminal that is reportedly code- and performance-compatible with Digital Equipment Corp.'s VT100.

The Teleray Model 100 features a nonvolatile, programmable function memory (880 characters/20 functions), RS-232 peripheral port with programmable data rates and six "hidden" character attributes, the vendor claimed.

Other features include two programmable smooth scroll rates, four different character widths — which may be programmed on a line-by-line basis — screen saver and a programmable 30-character answerback.

The Model 100 costs $1,790. Teleray can be reached at Box 24064, Minneapolis, Minn. 55424.

Local Net Fiber-Optic Link Bows

WASHINGTON, D.C. — A fiber-optic system for local data distribution that provides a direct link to the CPU for 16 different terminals from several different locations — all from a single fiber-optic cable pair — has been introduced by Versitron, Inc.

The multiplex link consists of a 16-channel central unit multiplexer and several remote units located throughout the local distribution network.

The central unit, located at the CPU, operates as a conventional time-division multiplexer and provides the 16-channel interface to the local distribution network over a fiber-optic cable pair and 16 parallel data EIA interfaces to the CPU.

Each of the remote units is assigned a certain number of channels and will automatically insert and withdraw the assigned channels from the aggregate signal.

The system was designed to operate with any combination of synchronous or asynchronous terminals with data rates up to a maximum of 19.2K bit/sec for synchronous and 9,600 bit/sec asynchronous.

A typical system with one unit costs $13,000 from Versitron at 6310 Chillum Place, N.W., Washington, D.C. 20011.

Interface Card Lets Teletype Printers Mimic 3286/7

DETROIT — Electronic Distribution Processing, Inc. has announced an interface card that reportedly allows the Teletype Corp. Model 43 printer to be attached to the Teletype 40/4 or 4540 series control units as a 3270-compatible 3286/7 printer.

The complete printer costs under $2,000. When combined with a Teletype 40/4 from Electronic Distribution, a remote user has a 3270 bisynchronous software-compatible control unit, display and printer and the dual port capability for $226/mo including maintenance on a three-year lease.

The firm is located at 1400 Howard St., Detroit, Mich. 48216.

CCI Announces Faster Service

NEW YORK — Consortium Communications International, Inc. has announced it now offers 1,200 bit/sec asynchronous and 2,400 bit/sec bisynchronous service to firms with higher speed requirements for their international message communications.

The company presently has several clients sending messages via Wang Laboratories, Inc. Model 30s, IBM 370s and Bell Dataspeed 40s.

The firm, an international record carrier that offers reduced-rate international Telex, is at 80 Broad St., New York, N.Y. 10004.

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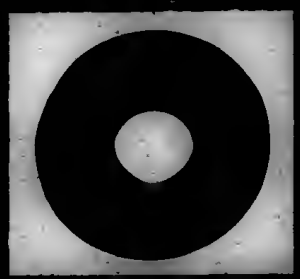

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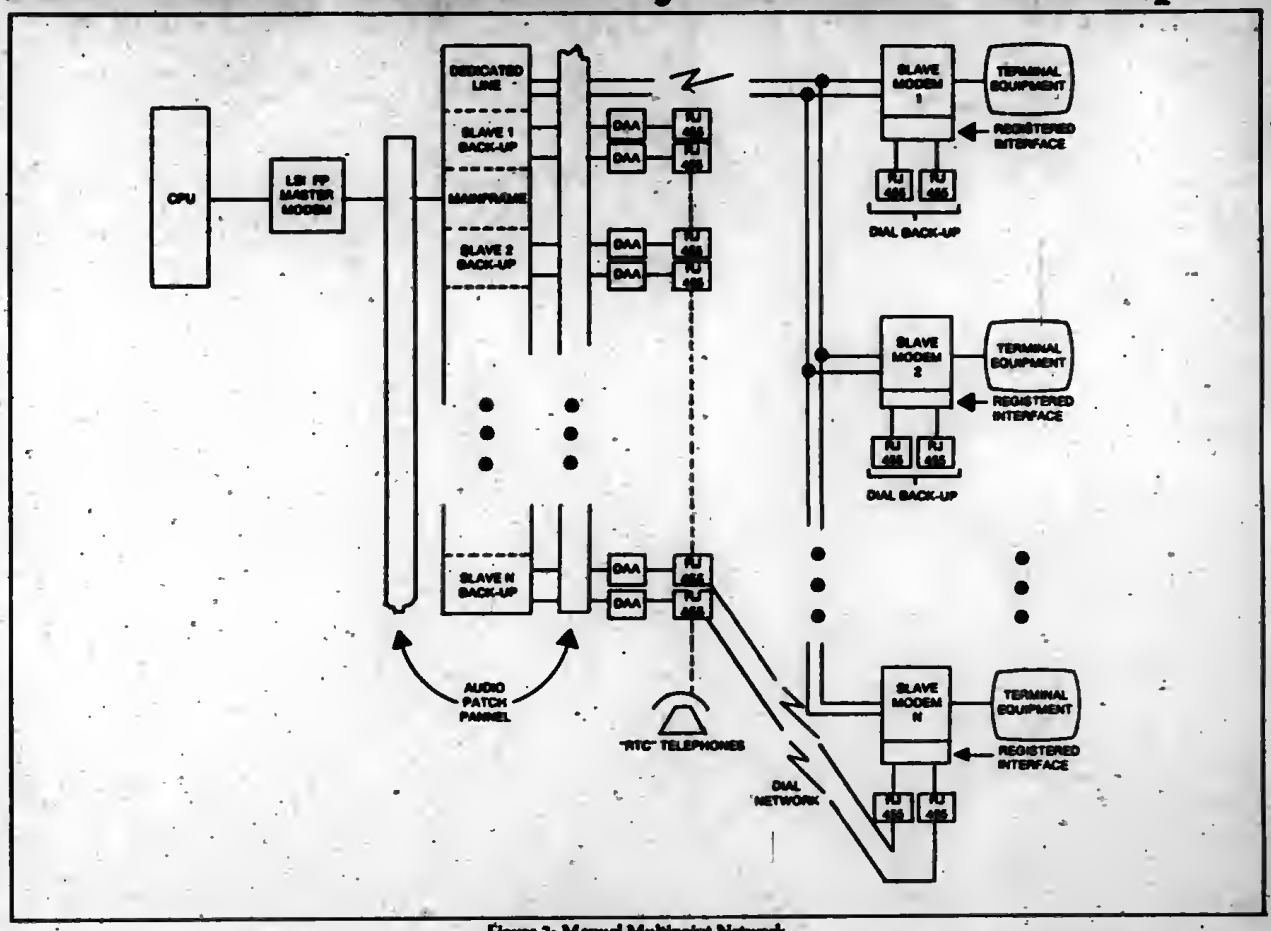

Figure 2: Manual Multipoint Network

(Continued from Page 65)

two simplex (one-way) circuits. Each connection replaces two wires of the 4-wire circuit. Because two calls must be made, this type of dial backup is usually called "dual dial backup."

The use of automatic dial backup is best illustrated by the following example. Let's assume the same network looked at before — a single 9,600 bit/sec circuit between the East Coast and the West Coast.

No Answer

In this case, a person at the computer center calls one of the remote site telephone numbers. The DBAAU does not answer this first call.

The person at the computer center now places a second call on the other data telephone to the second remote site telephone number. The DBAAU now answers both lines simultaneously and responds by sending the U.S. standard 2,025 Hz answer-back tone back to the computer site for eight seconds on the modem's transmit line.

This tone signals the computer center operator to operate the exclusion keys on the telephones and then push the "dial line" switch on his modem. Data can now be transferred over the dial network.

After data transmission has begun, the DBAAU continues to monitor for data carrier loss. If the carrier is not present for eight continuous seconds, the DBAAU assumes that the central site has terminated the connection. The modem is then reconnected to the leased line.

As discussed before regarding point-to-point manual operation, common dial-backup central site equipment for many co-located central site modems can be configured with audio patch bays and registered interfaces.

Multipoint circuits can also be backed up easily with dual dial calls. Because a multipoint circuit "talks" to many remote locations with one circuit, and each dial-backup link requires two calls to each remote location, a new item of equipment must be used to "split" the multipoint circuit.

This equipment takes the analog signal from the master modem and provides multiple analog interfaces for connection to the dial network through registered telephone interfaces — DAAs.

The line-sharing unit (LSU) is a 4-wire device receiving on all inputs. The receive side provides a path based on data carrier contention to the master modem.

A device such as the Codex Corp. line-sharing unit is modular, allowing up to eight 4-wire line interfaces. It also has an automatic level set (ALS) that sets the interface receive level when the DBAAU auto-answer tone is sent. This assures the proper level for operation on any randomly dialed telephone circuit automatically.

Each line interface can be used to "dial" a multipoint drop. The master modem and computer front end still see one circuit; therefore, the use of an LSU in dial backup applications does not require any computer system reconfiguration.

The equipment required at a remote multipoint site is similar to that used at a point-to-point remote dial-backup site. The use of a fast turnaround modem is the only significant difference.

Operation at the central site requires the operator to patch the master on the failed circuit into the main line interface on the LSU. The leased line is usually patched to the manual set line interface on the LSU.

This allows drops on the circuit be-

(Continued on Page 72)

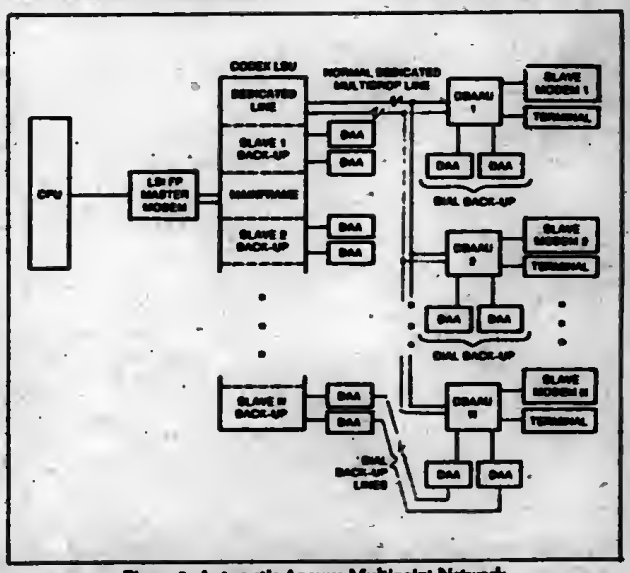

Figure 3: Automatic Answer Multipoint Network

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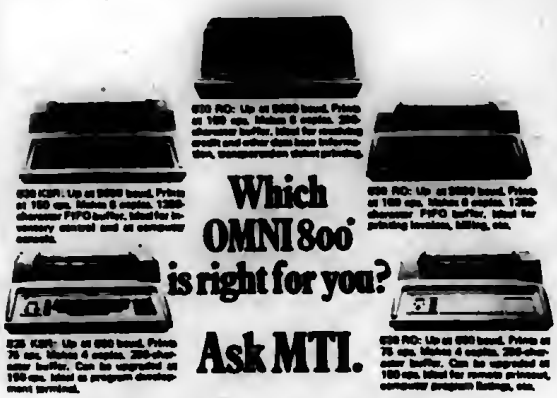

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GE Offers Enhancements For Terminet 200 Printers

WAYNESBORO, Va. — Three enhancements for the General Electric Co. Terminet 200 printer line have been announced. They are an APL/-Ascii keyboard layout, 9-wire print head and an alternate font.

The APL/Ascii option allows users to print and transmit APL and Ascii characters. Two distinct character sets are incorporated in the printer and the keyboard features specially marked key tops indicating APL and Ascii characters.

With the 9-wire print head option, the user can print lowercase characters with descenders and provide true underlining as well, the vendor claimed. The option is available with teleprinter and line printer models.

The alternate font allows users to define their own character sets. Special single or dual character sets, including special symbols, can be created, the vendor said.

The APL/Ascii option costs $350 and the 9-wire print head, $125. A single or dual font may be obtained. The single font costs $4,590 for a one-time programming fee and an additional $75 unit price. The dual font has a one-time $900 programming fee and a $150 unit charge, the vendor said from Data Communications Products Business Department, Waynesboro, Va. 22980.

RS-232C Modems Debut

BEAVERTON, Ore. — Cablebus Systems Corp. is offering three synchronous and asynchronous RS-232C data modems.

The UAM-1 is an asynchronous, full-duplex data modem for use on CATV or industrial cable systems. In addition to being used for linking remote terminals to CPUs, it can be employed in establishing networks for home computer users. It costs $250.

The UVM-1 is a voice-grade CATV modem intended for point-to-point delivery of voice or voice bandwidth signals. A transmitter enable function permits the product to be controlled manually or by a device such as a facsimile transceiver.

The UVM-1 is priced at $300.

The USM-1 is a synchronous full-duplex data modem for use on CATV or industrial cable systems. It is capable of data rates of up to 19.2 K byte/-sec. It costs $450, the vendor said from 7869 S.W. Nimbus, Beaverton, Ore. 97005.

Net Failure Remedy Offered

(Continued from Page 71)

fore an interruption to continue operation on the leased circuit. Only the drops that have failed the circuit interruption need to be dialed and backuped.

Figure 2 depicts this system example. A typical 5-drop multipoint circuit is shown. Many computer centers have many similar circuits originating from them.

In the sample system, for each drop beyond an interruption the computer site operator places a pair of calls. The remote operator answers the calls from the computer site operator (as in point-to-point operation), operates the telephone exclusion keys and then presses the transfer switch on the modem.

The computer site operator sets the incoming signal level on the LSU manual level set line interface module. Data transfer to the backed-up drop may now start.

Automatic dial backup is shown in Figure 3 for multipoint circuits. The equipment required at the computer center for automatic multipoint dial back-up is the same equipment described above for a master modem site.

Automatic dial backup of multipoint circuits is a combination of the manual backup procedure for multipoint circuits at the computer site and the procedure for automatic answer at a point-to-point site.

To illustrate the operation of automatic multipoint dial backup, refer to Figure 3. For each drop in the sample multipoint system beyond the interruption, the computer site operator needs to make a pair of calls.

First the computer center operator connects the LSU manual-set line interface to the leased line. Then, as each set of calls is made to each drop beyond the line interruption (dial calls are not necessary to drops before the line interruption), the following occurs.

When the DBAAU senses both dial backup lines ringing and the loss of Data Carrier Detect, both lines are answered simultaneously. The DBAAU responds after answering the calls by sending the U.S. standard 2025 Hz answer-back tone to the computer site for eight seconds. The DBAAU then switches the modem to the dial lines.

The answer-back tone signals the computer center operator to operate the telephone exclusion keys that connect an LSU ALS line interface to the telephone interface. The answer-back tone is then used to set the receive level in the ALS interface. Data can now be transferred to this drop over the dial network. If the remote modem does not receive data carrier detect within 16 seconds, the DBAAU terminates both calls.

After data transmission has begun over the dial network, the DBAAU monitors for data carrier loss. If the carrier is not present for eight continuous seconds, the DBAAU assumes that the central site has terminated the connection. The modem is then reconnected to the leased line.

Free Brochures

• "X.25 and Data Link Control Diagnostics" details a new software package from the Atlantic Research Corp., 5390 Cherokee Ave., Alexandria, Va. 22314.

Bits & Pieces

Two Honeywell Printers Boast Speeds of 300-, 600 Line/Min

WALTHAM, Mass. — Two line printers which operate at speeds of 300- and 600 line/min and feature operator-replaceable print bands are available from Honeywell, Inc.

The printers include a 64-char. Ascii print band, a paper tape driven vertical format unit and a 132-column-width carriage.

To set up either printer for 96-char. upper- and lowercase print, an operator removes the 64-char. band and replaces it with an optional 96-char. band.

The 300 line/min model is immediately available and costs $10,500 with a $115 monthly maintenance fee. The 600 line/min model will be available in February for $15,700 with a $170 monthly maintenance fee, the vendor said from 300 Smith St., Waltham, Mass. 02154.

Xylogics Processors Handle DG's Lark Disk, Multibuses

BURLINGTON, Mass. — Xylogics, Inc. has announced peripheral processors for Data General Corp.'s Nova and Eclipse minicomputers and Intel Corp.'s Multibus systems that can be used to control Control Data Corp.'s Lark disk.

Use of Xylogics 850 peripheral processor for control of Nova and Eclipse and the 440 for the Multibus systems permits connection of up to four Lark disks, each with 16M-byte capacity, the vendor claimed.

As Lark disks become readily available, Xylogics will provide a packaged disk subsystem, but at present, the individual peripheral processors cost $3,575 for the 850 model and $3,960 for the 440, Xylogics said from 42 Third Ave., Burlington, Mass. 01803.

Optical Wand Scanner Offered For MSI/66 Data Entry Unit

COSTA MESA, Calif. — MSI Data Corp. has introduced an optical wand scanner for its MSI/66 basic portable data entry terminal.

The scanner is said to use a simplified visible-light optical system and sells for 37% less than the firm's high-end data entry product.

A typical 4K-char. wand costs $600, or $700 with an 8K-char. memory, a spokesman said from the company at 340 Fischer Ave., Costa Mesa, Calif. 92626.

State's DDP Route Leads To 40% Productivity Climb

Special to CW

HARTFORD, Conn. — By going to the distributed rather than the centralized data processing route, the state's Bureau of Research, Planning and Evaluation here has cut computing costs 60% and improved productivity 40%.

The bureau, part of Connecticut's Department of Education, uses a Nixdorf Computer Corp. 600 series system as a remote job entry and application development tool to support five divisions, five district offices and 17 regional vocational technical schools. The statewide system was installed about a year ago and is used to produce, maintain, store and transmit more than 100,000 records monthly.

The computer system functions as an intelligent terminal, remote batch terminal, on-line inquiry and response system and as a stand-alone multistation data base management system, Dr. Evan Confrey, consultant for DP for the State of Connecticut's Department of Education, said.

With the most recent addition, Connecticut

(Continued on Page 76)

Dr. Evan Confrey (right), DP consultant for the Connecticut Department of Education, consults with department specialists Philip Mollison and Dave Kellogg. "We wanted a system that would not only solve today's problems, but would also allow us to grow and meet future needs without penalty. The compatibility issue was the key," Confrey said.

IBM Unveils Chip With 370/138 Capability

EAST FISHKILL, N.Y. — IBM has unveiled an experimental 5,000-circuit bipolar logic chip it said has the data flow capability of a 370/138 processor. The densest logic component previously developed by IBM was the 1,500-circuit Shottky chip, used in the System/38 and 4300 processors.

Developed at the firm's Data Systems Division laboratory here, the 5,000-circuit bipolar logic chip was developed as a test of IBM's existing design and manufacturing processes. The chip — containing 11,000 connections — was designed using an IBM 370/168 machine.

Most of the chip's manufacturing processes are identical to those used for the 704-circuit transistor-transistor logic (TTL) and the 1,500-circuit Shottky current-switch chips. In fact, Shottky claimed TTL-circuit technology was chosen for the experiment because of its compactness, speed and power requirements.

The new circuit's actual measured speed is 2.2 nsec, but is more conservatively clocked at 4 nsec, the spokesman said. This speed reportedly enables a machine cycle time of approximately 100 nsec, about the performance rating of an IBM 370/138.

A key finding of the 5,000-circuit logic chip experiment was that despite the four-fold increase in the number of circuits and connections, only a modest increase in computer design increase in computer design time was required, the spokesman observed.

News of the chip breakthrough was unveiled to scientists at last month's International Conference on Circuits and Computers in Port Chester, N.Y. There was no indication whether IBM will incorporate the experimental chip into future systems design.

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Calcomp Adds Two Models To Graphics Line

ANAHEIM, Calif. — California Computer Products, Inc. has expanded its IGS 500 turnkey graphics system series by adding two models that provide dynamic interactive graphics.

The models 400 and 300 support data bases that accommodate both graphics and nongraphics information and an English-like command language. The systems also support all IGS applications programs, including design and drafting, piping and mapping.

Stand-Alone System

The IGS 400 is a stand-alone system with 64K words of memory, a 50M-byte disk drive, a floppy disk subsystem with 128K words of storage space and a user workstation. The workstation includes its own picture processor, allowing dynamic graphics to be performed locally at the station, two CRT screens, a keyboard, graphics tablet and joystick.

In addition, the 400 can be expanded to 256K words of memory; other options include additional disk storage, plotter, a digitizer and impact matrix printer/plotter.

The IGS 300 is similar to the 400, but is supported with a synchronous communications line instead of floppy disks.

IBM 2780 protocol up to 9,600 bit/sec is used, the spokesman noted.

Both the IGS 400 and 300 can be upgraded to a 500 with multiple workstations operating simultaneously.

The basic IGS 400, including systems software, sells for $89,000. The satellite IGS 300 price begins at $85,000.

Calcomp can be reached at 2411 W. La Palma Ave., Anaheim, Calif. 92801.

Desktop System Gives Security

CHATSWORTH, Calif. — A computerized desktop security system priced under $15,000 for small to medium-size businesses has been announced by Cardkey Systems, Inc.

The Dimension 2000 is said to perform television surveillance, alarm monitoring, access control and control of security-related building operations.

The system features simultaneous English-language data display and television surveillance through a 9-in. CRT screen. Any number of closed circuit TV cameras can be connected to the system.

Also featured is event time control to preprogram security-related building or business operations up to 12 months in advance, including automatic operation of any electrical device, voiding and validating access card keys.

The system permits control for up to 4,100 card holders at up to 32 card-reader locations with built-in entry/exit and antipassback controls and an executive bypass status to override the controls.

While the system costs "just under $15,000," according to a company spokeswoman, card readers cost $1,000 each beyond that price.

Cardkey Systems is at 20660 Bahama St., Chatsworth, Calif. 91311.

Calcomp IGS 400

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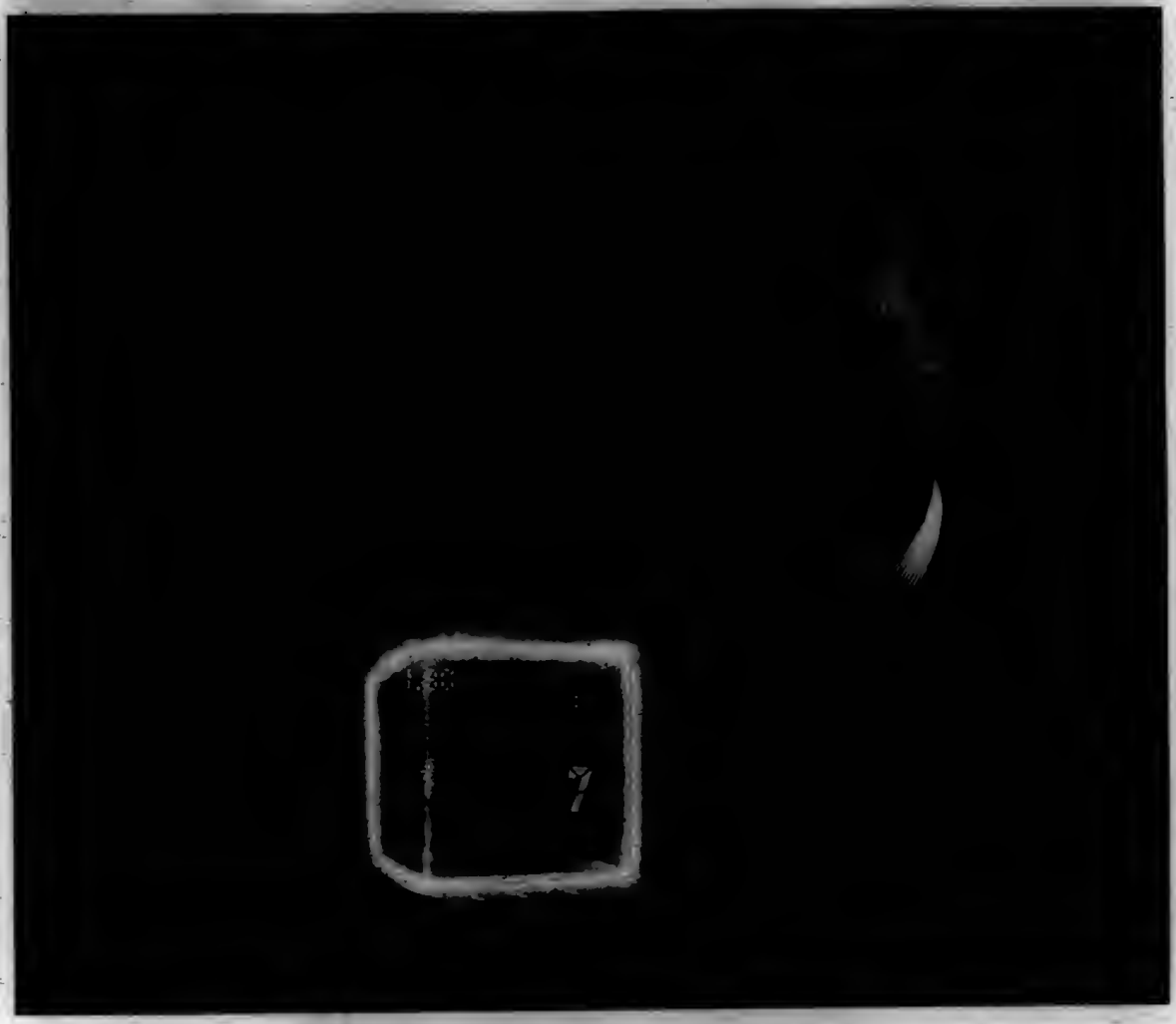

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AM International Offers Intelligent OCR Systems

LOS ANGELES — AM ECRM, a division of AM International, has announced three intelligent optical character recognition (OCR) page-reader systems.

The Concept 2, 3 and 4 page readers are similar in design to AM's Concept 1 system announced last year.

Concept 2 features font recognition programmed on minidiskettes. Operators can switch a diskette to read a variety of common typewriter fonts. The system includes a single two-port communications board, with a second available as an option. The unit costs $23,500, the vendor said.

Concept 3 features a keyboard display terminal that can modify optically scanned text without rereading it. The display screen can be tilted for user comfort, and the unit features multifont recognition. It costs $25,900 according to the vendor.

Concept 4 offers editing and storage capabilities and can be used for computer data entry as well as word processing applications.

The unit features a keyboard display terminal and programmable multifont recognition. Text stored on diskette can be recalled for editing while the page reader is scanning other documents.

The unit costs $31,900, the vendor said from 1900 Avenue of the Stars, Los Angeles, Calif. 90067.

State Follows DDP Route To Increased Productivity

(Continued from Page 73)

now has eleven Nixdorf computer systems installed and operating in eleven state agencies.

The Bureau's Nixdorf 600/50 DDP system has 33M bytes of fixed disk storage, a 1,600 bit/sec tape drive, seven terminals, a 300 line/min printer and three 45 char./sec terminal printers. The system enters, checks, double-checks, corrects and alternately stores and transmits information for each of the educational divisions it serves, Confrey related.

Since the system was installed, it has virtually eliminated the keypunch work that formerly dominated the Bureau's computing efforts. Previously, the Bureau used IBM 029 and 129 keypunch units to enter data for processing at the State Data Center located a mile away.

Now, instead of waiting the 24 hours previously needed to find out if data entry errors had been made, the Bureau knows immediately with the Nixdorf system, the DP consultant stated. Also, instead of only two data transmissions daily to the State Data Center, the Bureau can perform 10 to 20 times more work by working in an on-line fashion.

Three-Step Technique

The Nixdorf system is currently used to enter and maintain information on more than 55,000 people served by the Department of Education's Vocational Rehabilitation division. This particular effort involves a three-step data collection and processing technique, David Kellogg, a data communications analyst with the department, explained.

"With the old card system, every time we entered new client data we had to rekey information that had already been entered." With the present system's data base management feature "we now can expand files to include new information," he said. And, "we have control where we need it most — at the source."

Prior to the Nixdorf system, all hard-copy data received for the division was sent to an outside service bureau that entered the data and then sent it back to the Bureau for verification, he noted. "If data was entered wrong, it took two days to find out, and up to two weeks to correct it."

The Nixdorf system is also used to support the Division of Internal Management's general ledger system that encompasses a $470 million operating budget for the four other divisions; to prepare and evaluate surveys conducted with Connecticut's 149 local and 16 regional school districts; and to track vocational funds allocated to 169 towns, 12 community colleges and 17 vocational technical schools.

The computer is also used to edit a 250,000 record data file on special education students that is maintained by an outside service firm. Eventually, the Special Education Monitoring Information System will be entirely handled by the 600/50 processor, and allow data to be entered from the point of transaction.

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Six-Step UPS Claims High Efficiency Rate

ELK GROVE VILLAGE, Ill. — A line of uninterruptible power systems (UPS) inaugurating a six-step, pulse-width-controlled inverter design has been introduced by Sola Electric.

Intended for use with large mainframes, industrial process controls and other large-scale electronic equipment, the unit achieves a top operating efficiency of 84%, the vendor claimed. The six-step UPS is available in 25, 37.5 and 50KVA ratings.

Standard models are 120/208Vac, 60 Hz, 3-phase, 3 or 4 wire and range in price from $30,000 to $50,000, with a normal-size battery included. Sola is at 1717 Busse Road, Elk Grove Village, Ill. 60007.

"We switched to NCR," says Joseph A. Dee of Brooks Camera, Inc.

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Brooks Cameras is the largest photographic dealer in Northern California. And we're growing fast. We just outgrew the processing center that had been doing our computer work. We needed faster turn-around. And we wanted to establish our own priorities.

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DEE:
Yes, but not directly. First, we selected a competing vendor's newly announced system. But as we started to plan, we began to see problems ahead. No tape drive. Perhaps no COBOL. Perhaps no match-up with our sales terminals. And all we could get from the supplier were vague assurances that the problems would somehow disappear. So we switched to NCR. Very fortunately, as it turned out, because our NCR system is up and running. While the other vendor is still not delivering the other system.

Joseph A. Dee (left) is president and chairman of Brooks Cameras, Inc. in San Francisco. Jim Sweeney is his NCR Account Manager.

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ANAHEIM, Calif. — Minicomputers, bar code readers and CRT terminals are helping librarians keep track of the comings and goings of hundreds of thousands of books here at the Anaheim Public Library.

With approximately 400,000 items to watch and 40,000 library-card holders, the management of the library turned to a Digital Equipment Corp. PDP-11/34 minicomputer for control because many patrons don't always return materials on time, Pat Sullivan, head of technical services, said. The system was designed to provide up-to-the-minute information on library patrons and circulated materials.

The system's files consist of information on any type of material circulated to the public, information such as title, author, copyright and cost. The computer also keeps tabs on the patrons' names and addresses and also a record of any overdue fines.

Information is input to the computer via a number of Monarch Marking Systems, Inc. bar code readers and Lear Siegler, Inc. terminals. The bar codes are affixed to all of the library books and patron cards, Sullivan stated.

Book Checkout

When an individual attempts to check out a book, the clerk passes the bar code reader first over the person's card and the patron's record automatically appears on the terminal's screen. The clerk then checks to see if there are any overdue books or payable fines.

If the record is clear, the bar code reader is next passed over the book's bar code. The book and due date are added by the system to the patron's record and the transaction is completed.

For check-in, the process is similar, except the items are then removed from the person's record, Sullivan pointed out. "Of course, the clerk can also use the terminal's keyboard to access the computer and enter data, as well."

The library circulation system was developed by Systems Control, Inc. (SCI), Palo Alto, Calif.

"It is now nearly impossible for our patrons to be abusive with library materials because the computer won't let them, which is quite an improvement over our previous manual method," Sullivan stressed.

The library's old circulation procedures had no built-in way to review patron records as they checked out books. "Formerly, a person could almost start his own library at home and there would be a delay before we would be able to spot the large number of overdue books," Sullivan observed.

'It is now nearly impossible for our patrons to be abusive with library materials because the computer won't let them, which is quite an improvement over our previous manual method. . . Formerly a person could almost start his own library at home and there would be a delay before we would be able to spot the large number of overdue books.'

Anaheim Library's previous manual system is still common to many libraries, Sullivan indicated.

It was a photographic system. Each time an individual checked out a book, the clerk would take a photograph of the person's library card, the book identification card and a punched card with the due date. The photo was produced as microfilm, and when the book was returned, the punched card was sent to the Anaheim DP center on a batch basis.

"We would get printouts from the DP center regularly telling us which books were overdue," Sullivan said. "It then took six full-time employees to check the overdue book numbers against the microfilm to find the patron's name and address and send out overdue notices."

The library also kept paper files on each patron, which obviously could not be reviewed for fines every time that person checked out a book, she continued. "We would have had lines out the front door. In fact, the only way we could really collect all fines from negligent people was to make the library cards expire every year. Then we could check records before issuing a new card."

Lifetime Cards

With the current system, patrons can get lifetime cards, Sullivan explained.

Sullivan pointed out that the computer also takes care of issuing overdue notices. "On a daily basis, the computer scans for overdue notices," she said. "This is done at night in a batch processing mode. Additionally, on a monthly basis, we can get a printout of people with fines in excess of $50 [that] are then handled by the individual libraries with phone calls and letters."

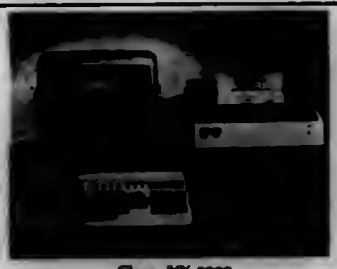
According to Sullivan, the system has been so well-received in Anaheim that the library has installed one for the Placentia library and will implement systems for Buena Park and Yorba Linda library districts in the near future. All of these libraries will interface with phone lines to the Anaheim-based computer.

Sharp Unveils Business System

PARAMUS, N.J. — An expandable small business computer featuring a step-by-step programming aid will be available from Sharp Electronics Corp. early next year.

The YX-3200 includes a CPU, high-resolution CRT, dual floppy disk drives and an impact printer.

The desktop system has an expandable 32K-byte read-only memory and 64K-byte random-access memory, and an automatic program generator that poses questions and when answered "yes" or "no," actually designs the desired program, the vendor claimed.



Sharp YX-3200

The price for the system is approximately $6,000.

Sharp Electronics is located at 50 Ans Drive, Paramus, N.J. 07652.

Like the Lear Siegler ADM-31, a highly intelligent buffered terminal that practically thinks for itself. And the smarter ADM-42 with its 15-inch diagonal screen. Or the low-cost DUMB* terminal from LSI, the ADM-3A which at $950 makes a lot more sense than its name implies.

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GSA Contract #GS-00C-02024 2-01-82

LSI-11 Gets Add-In Memory

WALTHAM, Mass. — Cambex Corp. has unveiled an add-in memory for Digital Equipment Corp.'s LSI-11 microcomputers that features on-board refresh, parity and a provision for battery backup.

The Cambex board is reportedly double the density of standard DEC memory with up to 128K bytes on a single card.

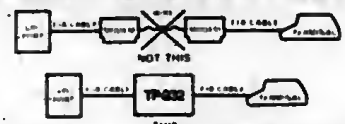
It is also said to be the first to offer this dense configuration using 16K-byte random-access memory technology. Other configurations of the memory include 32K, 64K and 96K bytes, a spokesman noted.

Read and write access times are 140 nsec and 100 nsec, respectively, and the board's cycle time is 450 nsec, he added.

The memory is priced at $1,300 for the 128K-byte version and $750 for the 64K-byte model. Cambex is located at 360 Second Ave., Waltham, Mass. 02154.

TP-232 MODEM SIMULATOR

The TP-232 Modem Simulator replaces a pair of modems in local, in-house applications, as shown below. With its wide variety of strap selectable options, this unit is a versatile tool for system check-out as well as an economical replacement for a modem pair



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Color Unit, WP System, Floppy Fit Commodore 8032

NORRISTOWN, Pa. — Commodore Business Machines, Inc. (CBM) has announced an expandable color computer system selling for less than $300, a floppy disk drive and a word processing (WP) system for use with the Commodore 8032 business system.

The Video Interface Computer (VIC) 20, said to rival systems priced at four or five times its cost, connects to any television set or monitor and provides 5K bytes of memory.

The unit features programmable function keys, memory expansion to 32K bytes, standard Petbasic, typewriter keyboard, external expansion ports, 22-char. by 23-line screen display, graphics character set and plug-in program cartridges.

The VIC 20, priced at "under $300," according to the firm, will be available during the first quarter of 1981.

The CBM 2031 single floppy disk unit stores up to 170K bytes on a single 5.25-in. floppy diskette and incorporates an IEEE-488 interface for use with the firm's PET and CBM computer series.

A serial-bus version, tentatively designated the 2031S, will provide compatibility with Commodore's VIC 20 computer, a spokesman said.

The CBM 2031 will sell for "under $600" in both the IEEE and serial bus configurations and will also be available in the first quarter.

The Wordcraft 80 WP system, when combined with the Commodore 8032 business system, is said to provide a complete WP system for $5,000, compared with "most dedicated WP systems," that reportedly cost up to $13,000.

Commodore is located at 950 Rittenhouse Road, Norristown, Pa. 19403.

Disposable Print Head

Dot Matrix Printer Debuts

TORRANCE, Calif. — An 80-column dot matrix printer for microcomputer-based systems is available from Epson America, Inc.

The MX-80 features a disposable print head that wears out after 50 million to 100 million characters; a new one costs $30 and can be installed by the user, the vendor claimed.

The product prints a full character set, in up to 12 print modes, of which more than half utilize multistrike and/or multipass techniques to generate letter-quality printing, a spokesman said.

The price for the printer is $650, the vendor said from 23844 Hawthorne Blvd., Torrance, Calif. 90505.

SMD Controller for PDP-11

TUSTIN, Calif. — A single-board disk controller for Digital Equipment Corp. PDP-11 computers that handles up to four storage module disk (SMD) drives has been announced by the Wespercorp division of Western Peripherals.

The DC-231, when used with a Control Data Corp. 80M-byte drive or equivalent, is completely compatible with all DEC operating systems having RM02 support, a spokesman said.

A 300M-byte drive will yield RM05 compatibility. In addition, the controller is software compatible without patches or drive modifications.

The unit was designed with self diagnosis, displayed by five LED indicators on the board, the spokesman added.

Serviced and maintained by Wespercorp's service organization, the controller costs $3,150 from the company at 14321 Myford Road, Tustin, Calif. 92680.

Cash Register Replaces Computer

ST. LOUIS — Sauer Computer Systems, Inc. is offering a software-controlled cash register capable of functioning as a stand-alone computer, data collection center for a "back room" computer or a terminal to a central computer.

The Retail Data System stores the day's transactions on one or more minifloppy disks. A switch is available which allows either on- or off-line operation of the register. If the back room machine is down, transactions can be stored in the register to be processed later, the vendor claimed.

The systems are supplied with 28K-byte random-access memory. The RDS-100 system, with one minifloppy disk drive and a 30 char./sec printer costs $4,000, the vendor said from Suite 601, 1750 South Brentwood Blvd., St. Louis, Mo. 63144.

Apple II, Centronics Printer Tied

SUNNYVALE, Calif. — The California Computer Systems Model 7728 interface gives users of the Apple Computer, Inc. Apple II compatibility with Centronics Data Computer Corp.-type parallel interfaces.

Such printers include the Integral Data Systems, Inc. Paper Tiger, Okidata Corp. Microline 80, Microtek, Inc. MT-80P and MPI 88T.

An on-board 256K-byte read-only memory (ROM) provides driver firmware and controls Ascii character output to the printer.

The driver responds to standard Apple II printer commands for selection of command characters, characters per line, auto feed and video echo, the vendor claimed.

Users who choose to develop their own drivers may replace the standard ROMs with random-access memories (RAM). A ROM/RAM jumper makes the necessary logic changes.

The 7728 costs $119.95, the vendor said from 250 Caribbean Drive, Sunnyvale, Calif. 94086.

Adapso Revamps Stands on Top Issues

By Marcia Blumenthal
CW Staff

KAUAI, Hawaii — The Association of Data Processing Service Organizations, Inc. (Adapso) agreed to formulate a new position on its long-range approach to IBM and formed a new committee to study the issue of overtime pay for programmers at its 20th annual meeting here recently.

While these are not new issues, Adapso has decided to take a more active position on these common industry concerns.

By agreeing to develop a new position paper on IBM, Adapso reversed its former position, formulated in 1972, advocating the breakup of IBM into two separate companies, one for hardware products and one for software and services.

Adapso's general mandate is to protect the software and services industry from competition from regulated industries such as AT&T and banks. To that end, Adapso last year spent 40% of its $1.1 million budget on legal fees.

However, IBM does not fit into the regulated industry category. Adapso prefers to concentrate its effort on persuading IBM to release its interface standards for hardware and software products on a timely basis, one Adapso member said. When IBM makes early announcements on products without issuing specifications, the market for independent vendors dries up, damaging revenues.

Moreover, Adapso wants IBM to further unbundle its software, not only from its hardware, but also from other software products. The association plans on calling for full costing and fair market pricing for all IBM software products.

(Continued on Page 82)

CW At Adapso

STC Planning IBM-Type CPU

LOUISVILLE, Colo. — Storage Technology Corp. (STC) intends to develop a high-performance mainframe for the IBM-compatible market.

This development effort will mark STC's initial entry into the CPU market.

The new computer venture will be financed by a separate independently owned entity which will be organized to design and develop, in conjunction with STC, a family of high-performance IBM compatible CPUs.

"Use of an independently financed development entity should allow Storage Technology to use its financial resources for expansion of its existing product offerings and at the same time avoid the adverse impact on Storage Technology's near-term earnings which would otherwise result if the development program were to be financed solely by Storage Technology," Jesse I. Aweida, STC president, said.

Upon completion of the development effort, STC will have the right to purchase the technology developed by the venture on a deferred payment basis and obtain the exclusive manufacturing and marketing rights to the new computer.

According to Aweida, "Financing of the development entity is expected to commence in late 1980 or early 1981.

"First customer shipment of the new central processor by Storage Technology is expected to take place in early 1984," he added.

World Teleprinter Mart Viewed Topping $1 Billion by 1985

By Marguerite Zientara
CW Staff

The worldwide market for teleprinters will exceed $1 billion by 1985, according to two market research firms — Creative Strategies International (CSI) of San Jose, Calif., and Venture Development Corp. (VDC) of Wellesley, Mass.

While the two agreed the market is growing for teleprinters, VDC was more optimistic, predicting that it will top $2 billion by 1985, according to its recent study, "The Teleprinter Terminal Industry: A Strategic Analysis."

In spite of its optimism about future sales, VDC noted that shipments of teleprinter terminals in 1980 will be lower than they were in 1979. "Although the recession has not hit most areas of the computer industry," VDC found, "the teleprinter terminal market is one area that has been affected."

Apparent Disparity

Addressing the question of how the teleprinter market can decline $200 million "when Digital Equipment Corp. and Teletype Corp. cannot manufacture them fast enough," VDC blamed the apparent disparity on the fact that "the vast majority of the ... industry is seeing flat or negative growth in 1980."

Of the 32 U.S.-based teleprinter manufacturers, three industry leaders control over 60% of 1980 shipments, VDC noted. "Growth potential for these and approximately 15 other manufacturers looks good, but the rest ... will continue to lose market share."

While CSI predicted that the present suppliers will be joined by "at least a dozen more by the end of 1985," VDC believes there will be a "shake-out" in the teleprinter industry "in the near future."

Competition in the teleprinter marketplace of the 1980s "will be based on price and performance, customization and innovative marketing to new groups of potential teleprinter users," CSI forecast.

Expected to be installed over the next five

(Continued on Page 91)

DEC Meet Unfolds Good and Bad News

By Tim Scannell
CW Staff

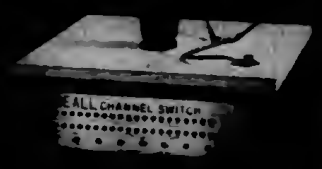
BOSTON — There was some good news and a little bad news here recently at Digital Equipment Corp.'s annual meeting.

The good news, for stockholders, is that company profits in the first quarter of fiscal 1981 are up 24% to $56.2 million and total operating revenues rose 34% to nearly $654.4 million. On the whole, company revenues for the past fiscal year increased 31% to nearly $2.4 billion and earnings jumped 40% to just under $250 million.

However, the bad news for customers is that demand for the firm's computer products is growing and will increase delays for equipment deliveries. DEC's business is

(Continued on Page 90)

Instant Cure for Computer Indigestion



John Beall & Company, Inc.

Firms Hurt by Datapro Surveys To Get Legal Aid From Adapso

KAUAI, Hawaii — The Association of Data Processing Service Organizations, Inc. (Adapso) said it will provide legal assistance to any of its members determined to be competitively injured by Datapro Research Corp.'s surveys of software products.

Datapro recently revamped its survey techniques, but Adapso statisticians do not yet know whether the new survey method will yield results more statistically valid or reliable than past surveys.

Part of the flap over the surveys revolves around the sample size Datapro uses for its rating, which are on a scale of one to four. To define a statistically valid population for each specific software product included in the survey would be expensive, Adapso said.

Adapso contends the sample is far too small to be statistically accurate. As a result, some software firms have suffered a loss of business due to the survey, the association maintained.

Datapro's position has been that it does not intend to spend significantly more money on performing surveys, Adapso staffers charged.

Adapso officials said Datapro wanted the association to help formulate the survey method, but counsel advised against this.

Adapso Strengthens Stands On Top Industry Concerns

(Continued from Page 81)

While the vendor Relations Committee will hammer out the IBM position paper, the Software Industry Association (SIA), a special entity within Adapso, is developing the specific types of information needed on interface standards from major hardware vendors.

An SIA committee is drafting these interface specifications and expects to complete the task in two to three months.

In general, Adapso members report satisfactory relations with IBM. Some 80 members are participating in exchanging "publicly available" information with IBM.

As for the programmer overtime issue, Adapso members claim it has more serious implications for DP groups in end-user sites than those at software and service companies.

Nonexempt Employees

Currently, the U.S. Department of Labor (DOL) does not consider programmers professionals and they are classified as "nonexempt" employees.

Under the Fair Labor Standards Act, programmers could be considered exempt if they "regularly exercise individual disgression and judgment on matters of material importance to their employers' business or customers of their employers. Many software and service firms view their programmers as consultants."

Although the new Adapso Professional Staff Committee claims it is neutral on the subject and its task is to formulate a position for Adapso, most firms in the industry consider programmers professionals. Nonetheless, part of its activity will be to gather data on whether firms pay programmers overtime.

However, the risk of disgruntled employees complaining to the DOL or DOL-initiated investigations could cause significant financial problems to both vendors and end-user installations.

Weissman Gets Top Adapso Post

KAUAI, Hawaii — Robert E. Weissman was named the 1981 chairman of the Association of Data Processing Service Organizations, Inc. (Adapso) at the association's 20th annual meeting here recently.

Besides Weissman, Jerome L. Dreyer was named president of Adapso. His previous title was executive vice-president.

Laurence J. Schoenberg, president of AGS Computers, Inc., will serve as vice-chairman of the board.

Named vice-president of administrative and self-development was Richard W. Thatcher Jr., president of Atlantic Software, Inc.

Vice-president of communications next year will be David Sherman, general counsel of General Electric Information Services.

Serving as vice-president of competitive practices will be Fred Lafer, vice-president and general counsel of Automatic Data Processing, Inc.

Named vice-president of education and small business interests was Arthur M. Kramer, president of Praxa Corp.

John P. Imlay, Jr. was named vice-president of image. He is chairman and chief executive officer of Management Science America, Inc.

Selected as vice-president of software issues was Bruce T. Coleman, vice-president of Informatics, Inc.

Named vice-president of government relations was Stephen H. Beach, general counsel at Control Data Corp.

During the past year, 72 companies joined Adapso, bringing total membership to 436 members. In all some 200 representatives of 172 companies attended this year's annual meeting.

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CPG is in short, a complete and thorough language for generating efficient, on-line application programs in a teleprocessing environment. And it is clearly the most significant advance made in the area of teleprocessing programming in years. While new to the United States market, CPG has been used for several years internationally with users reporting time-savings as significant as 80% when compared to the cumbersome Cobol. Cost-savings in the areas of data-processing budgets, CPU and memory upgrades, education and support are equally impressive.

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CPG features built-in screen data mapping support, interactive testing and debugging, and on-line screen editing. Additionally, CPG programs are also portable across teleprocessing monitors, file structures, data bases and operating systems.

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Lead Systems Software Programmer/Analyst	$28,000	$27,500	2%
Senior Systems Software Programmer/Analyst	$26,000	$23,500	10.4%
Intermediate Systems Software Programmer/Analyst	$21,000	$19,800	5%
Lead Applications Programmer/Analyst	$26,500	$24,800	6.6%
Senior Applications Programmer/Analyst	$23,500	$21,500	7.5%
Intermediate Applications Programmer/Analyst	$19,500	$18,000	10.6%

1980 Adapso Compensation Survey Results

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370/135—GF	196K IBM & 328K Intel	2/81
370/138—J	1 Meg IBM	1/81
370/145—H	262K IBM & 786 K CMI	11/80
370/148—J	1 Meg IBM & 1 Meg EM & M	2/81
370/155—II	IBM Dat Box & 3 Meg CDC	11/80
370/158—U31	524K IBM & 2.6 Meg EM&M	3/81
370/168—L	4 Meg IBM & 2 Meg EM&M	12/81
4331—J1	1 Meg IBM	2/81

All systems qualify for IBM maintenance.
The auction will be held in New York City at our York Avenue Galleries, 1334 York Avenue at 72nd Street. If you have any questions, or if you would like a copy of an auction catalogue which describes in detail all of the equipment to be offered, please contact John J. Carr, Director of Sotheby's Business Systems Department, at (212) 472-4780.
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Computer Services Pay On Par With DP Salaries, Adapso Survey Reveals

By Marcia Blumenthal
CW Staff

KAUAI, Hawaii — Salaries for technical and professional staff in the computer services industry are about equal to compatible staff at DP installations, according to the second annual Association of Data Processing Service Organizations, Inc.'s (Adapso) Compensation Survey.

Overall, the growth rate in total compensation for technical and professional positions was 8.5% over the year. Generally, lower level positions in the industry pay about 4% to 6% less than at end-user sites in all industries, but are about that much greater for higher level technical staff, noted Joseph H. Blumberg, vice-president of human relations at Comshare, Inc.

Moreover, the career paths at vendor companies are broader, he maintained.

While the average compensation increases appear modest, some personnel had increases in the 15% to 20% range, but because of attrition at the high end of one category and the filling of the slots at the entry-level salary for the same category, actual percentage increases seem lower, he explained.

Average increases for systems software programmer/analysts are shown in the accompanying box.

The time it takes an employee to progress from a trainee to a lead position is constricting, Blumberg noted:

Because promotional increases are greater than merit raises, this may explain the relatively low pay increase averages within specific categories.

On the other hand, the average jump in salary from a trainee position to associate is

CW at Adapso

27.3%, from an intermediate rating to a senior rating is 20%, and from a lead slot to a managerial position is 30%.

Like other DP installations, Adapso member companies are experiencing a shortage of technical staff.

However, computer science programs at universities are concentrating on teaching students to write programs for an end use such as inventory control, Blumberg observed. But the computer services industry needs talent that has a broader systems view and can make the distinction between what tasks should be done by the hardware and what tasks should be performed by software programs.

The survey was conducted by Adapso and A.S. Hansen, Inc., with 100 firms participating. The survey collected data on compensation not only for technical personnel but also for executive, sales and selected middle management positions. The survey is available for $500 to non-Adapso members and $200 for Adapso members from A.S. Hansen at 1080 Green Bay Road, Lake Bluff, Ill. 60044.

Ampex, Signal Ink Accord

REDWOOD CITY, Calif. — Ampex Corp. and the Signal Cos. Inc. have signed a formal definitive agreement providing for the acquisition of Ampex by Signal through an exchange of common stock.

The agreement calls for the exchange of .85 share of Signal common — prior to an announced stock split — for each common share of Ampex.

The merger is still subject to approval by the shareholders of each company, a favorable tax ruling and approval by various regulatory agencies, the companies noted.

Contracts

Comsat General Corp. has been awarded a consulting and technical assistance contract by AT&T's Long Line Division to help implement AT&T's Telstar-3 domestic communications satellites, which will succeed the present Comstar series.

Informatics, Inc. has been awarded a two-year $1.6 million U.S. Air Force contract that involves intelligence information handling at Strategic Air Command headquarters in Nebraska.

Nixdorf Computer Corp. has signed a $2.1 million contract with CISI Group, Inc. for the installation of 35 Nixdorf 8840 word processing systems to be used for a variety of applications, including compilation of mass mailing lists and typing of catalogs and legal contracts for customers.

The Redwood Bank of San Francisco has signed an agreement with Boeing Computer Services Co. for information processing services, for an undisclosed amount.

Services Firms Say Recession Taking Toll

By Marcia Blumenthal
CW Staff

KAUAI, Hawaii — Has the recession taken its toll on processing services companies?

Yes, said Richard L. Crandall, president of Comshare, Inc.

CW at Adapso

In 1977, Crandall forecast processing service companies would feel recessionary pressures one year after the start of a recessionary period in the general economy.

That prediction took shape after the second quarter this year when the revenue growth rate of 17 publicly traded processing service firms dipped 28%. Earnings were not hurt as severely.

While the jury is still out on how long revenue growth will continue to lag, Crandall noted "everyone in that sector of the industry said August was terrible." His model predicted the third quarter will see a lag in revenue growth with recovery trailing the recovery of the general economy.

Oddly enough, "new name" contract signing is going along at a healthy clip, Crandall reported during a recent interview here at the Association of Data Processing Service Organization Inc.'s (Adapso) 20th annual meeting.

However, older, more experienced customers, which supply the bulk of the business, have figured out how to use outside services more efficiently. "A company may request a monthly report instead of a weekly one," he observed.

One solution to the revenue doldrums is to write long-term contracts — two to four years — with existing users at discounts ranging from 10% to 25%. Comshare recently wrote $6 million worth of long-term business on this basis, Crandall maintained, adding that other companies are also using this approach.

Inflation has compounded the drag of the recession, he noted. Raising prices could help, but a lot of service companies are afraid to raise prices even though software is underpriced, he maintained. Price increases have generally been in the 7% to 10% range.

Although margins haven't been as severly hit as revenues, service companies can't achieve as much "tweaking" as before from economies in hardware.

The cost of hardware as a percent of total revenue during the early 1970s was 50%, but today is only 18%, Crandall noted.

CW Photo by M. Blumenthal

Robert E. Weissman

Industry 'Identity Crisis'

KAUAI, Hawaii — "There is an identity crisis in our industry." The perception that society is goods-oriented and technology is the key to success is partly fallacious, Robert E. Weissman, chairman of National CSS, Inc. and chairman-elect of the Association of Data Processing Service Organizations, Inc. (Adapso), declared here at the group's 20th annual meeting recently.

Data has become the new control point in our information society, and "we cannot neatly separate data from software."

The infrastructure of today's society is based upon information and the software and services industry must work toward recognition of this phenomenon, he said.

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CDC Opens First Business Center

MINNEAPOLIS — Control Data Corp. has opened the first of a nationwide series of Business Centers designed to give small business owners access to a wide range of products and services.

Technology, computer services, microcomputer software, education and training services, hardware and financial and insurance services will all be available at the centers, according to W.H. Bruning, CDC vice-president of retail marketing.

The first center will be in the Minneapolis suburb of Edina. Initially, Ohio Scientific, Inc. (OSI) microcomputing systems and accompanying OSI software will be available.

Computing services and software available will include everything from generic business packages, such as general ledger and billing, to the scientific and engineering applications of Cybernet. Services will be available directly or through referral.

Consulting and education services to be offered range from technical and information processing consulting to sound business decision-making advice. Included will be consulting services on a complete range of marketing, personnel and financial matters.

Financial services will involve leasing, equipment financing, insurance and working capital and other business loans, including the Small Business Administration loan program.

A variety of other services also will be available to the small business owner, including an import-export trading company, temporary help, hiring assistance, hardware and software maintenance and support a host of related business products media and supplies.

The Edina store will be the first of eight to be opened in 1980 — there will also be two each in Minneapolis-St. Paul, Milwaukee, St. Louis and Kansas City, Mo.

Pertec Shuts Down Plant, Halts Building Plans

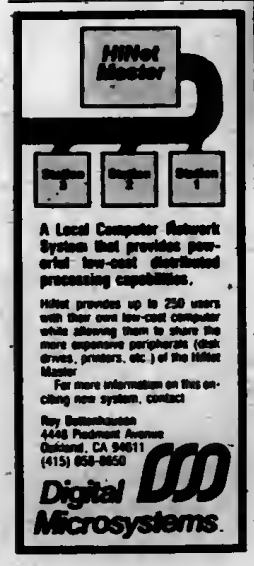
ALBUQUERQUE, N.M. — Pertec Computer Corp. has closed its computer manufacturing facility here and suspended previously announced plans to construct a new manufacturing facility in the Academy Industrial Park northwest of the city.

"Although the company is continuing to grow its computer systems production generally, improved labor efficiencies and the company's concentration on smaller systems has pushed demand for facility expansion several years later than previously anticipated," Thomas Elrod, Pertec's senior vice-president and general manager of the Systems Group, explained.

Corrections

First Federal Savings & Loan Association, which has placed a $1 million computer order with Univac [CW, Oct. 13], is located in Columbus, Ga., not Columbus, Ohio.

James J. Bryne was appointed president, not vice-president, of the North America Marketing Group at Mohawk Data Sciences Corp. [CW, Oct. 20].



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DEC Has Good News, Bad News

(Continued from Page 81)

booming and "we have paid a price," Kenneth H. Olsen, the company's president and chief executive officer, said. "Everybody's unhappy when there's not enough equipment."

Speaking to more than 200 stockholders, analysts and other people at the annual meeting, Olsen noted that while the backlog of equipment orders is increasing the company is doing everything it can "to take care of its customers."

The minicomputer manufacturer spent nearly $109 million in this first quarter on property and plant expansion aimed at providing sufficient capacity to meet customer demands. In fact, full-year spending should be close to $400 million, as opposed to the $210 million spent in fiscal year 1980.

DEC has also stepped up production on its more established products such as the VAX-11/780 32-bit minicomputer and the relatively new VT100 terminal. In 1979 DEC increased production on the VAX by 40% to satisfy customer demands and tripled the production schedule for its CRT terminal, Olsen stated.

At a press conference following the meeting, Olsen stated that DEC was presently manufacturing about one VT100 terminal per minute. But, "we'll never make enough of them" or computers, he said.

Looking toward the future, Olsen pointed out that microprocessor electronics — although not of major importance in terms of dollars earned — will play a big part in systems development. Chip manufacturing facilities, like the one recently opened in Hudson, Mass., will serve to speed up computer design and production.

Home Computers

He also restated the company's decision not to dive into the home computer field. "One thing that's sure going to kill us is if we try to do everything," he said. Historically, "many people got burned trying to satisfy both markets."

Olsen observed that there are actually two definitions of personal computing: one refers to the home-based system that helps a consumer balance a checkbook, and the other concerns a computer or intelligent terminal that is used in the office.

In the future, everyone will have computers of the second type that employ time-sharing for difficult problems, can access large files and might even be interfaced to typesetting machines for instant document preparation, he explained.

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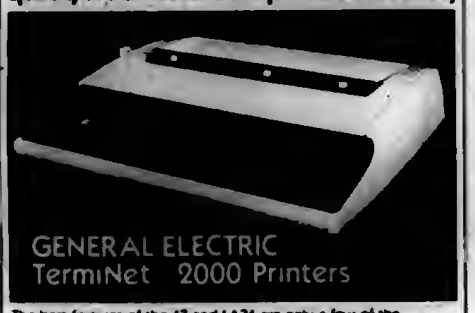

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STC Forms OEM Subsidiary

LOUISVILLE, Colo. — Storage Technology Corp. (STC) has formed an OEM subsidiary to design, manufacture and market peripheral products for original equipment manufacturers of computers and other control equipment.

The new subsidiary is called STC Peripherals, Inc. Its president is William R. Mansfield, who is also a corporate vice-president of STC.

Commenting about the establishment of STC Peripherals, Jesse Aweida, chairman and president of STC, said, "Storage Technology's OEM business is a very important part of both our current and future operations. By setting it up as an independent subsidiary, we will be able to better serve this important market."

PRC Restructures Into Four Units

WASHINGTON, D.C. — Planning Research Corp. (PRC) has been restructured into four strategic business units. The units and the executives heading them are:

- Commercial Information Systems — Bert I. Helfinstein, currently the president of PRC Realty Systems, Inc. This new unit will seek a greater PRC role in the computer services business.
- Government Information Systems — Wayne V. Shelton, currently the president of PRC Information Sciences Co. Shelton's unit will have overall responsibility for PRC's computer software and systems services to the federal government.
- Architectural and Engineering Services — Jerome M. Fischer, an executive vice-president of PRC. Fischer's unit will direct the company's planning, design and management activities for construction projects.
- Systems Engineering and Facilities Support — George E. Monroe, a vice-president of PRC and currently the president of PRC Systems Services Co.

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Teleprinter Mart Expected to Top $1 Billion

(Continued from Page 81)
years is "a cumulative 18% of all teleprinters . . . related to electronic mail, office automation and interoffice message systems," according to CSI.

In addition, public data networks (PDN) are expected to provide the entry vehicle for teleprinting terminals into the home market, CSI continued. Other potential home applications include newspaper and magazine delivery, electronic U.S. mail, text editing, word processing, electronic yellow pages, travel planning and reservations, library research, family bookkeeping and keyboard entertainment.

Fastest Growing Sector

The fastest growing market sector, according to VDC, is nonimpact teleprinters, despite the drawbacks of their expensive heat-sensitive paper and their ability to print only one copy at a time.

The daisywheel segment of the impact teleprinter market is also doing "quite well," according to VDC, but U.S. suppliers in that area are somewhat concerned about Japan's entry into the marketplace, VDC noted.

"Japanese daisywheel manufacturers are coming out with improved technologies at lower prices," VDC noted, adding that U.S. makers will have to improve their price and performance ratios in oder to successfully compete.

"While CRT devices are viewed by many observers to be a serious contender for the attention of teleprinter users," CSI observed, "it is most likely that teleprinters and video display devices will evolve toward separate markets."

"Rather than full-size CRT displays used in conjunction with teleprinter activities, it is anticipated that a 1- to 3-line LED/LCD display will be incorporated into the teleprinter to facilitate input, reading and editing of material prior to transmission," CSI suggested.

At the high end, the teleprinter market is driven by "sophistication of functional capability," CSI noted. "With new technologies often becoming obsolete within three years of introduction, product flexibility and extensibility will be critical."

Challenges to the established vendors will exist in the form of "a wide variety of entrepreneurial small firms [that] will . . . offer high-quality, lower-priced products," CSI predicted.

These new and small firms entering the market "will have to overcome several barriers to entry," according to CSI. "Lacking the economies of scale that large-quantity production allows, small firms find it difficult to offer competitive pricing."

All in all, "the teleprinter as a communications device is expected to rise as dramatically as the telephone did," CSI predicted. CSI is located at Suite 275, 4340 Stevens Creek Blvd., San Jose, Calif. 95129. VDC is located at One Washington St., Wellesley, Mass. 02181.

Tymshare to Buy Capital Credit

CUPERTINO, Calif. — Tymshare, Inc. has signed a letter of intent to purchase Capital Credit Corp., a subsidiary of Union Corp. based in Verona, Pa. The purchase price of the acquisition was not disclosed.

Capital Credit, a retail credit collection service, is headquartered in Washington, D.C. It has 17 branch offices throughout the U.S.

Capital Credit's services will join those provided by Tymshare Transaction Services, a subsidiary of Tymshare, which provides credit and debit card transaction processing and authorization services for financial institutions and merchants.

Capital Credit reported annual revenues of approximately $8 million for its fiscal year ending June 30.

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Supershorts

Burroughs Corp. has formed an Air Force Systems Division within its Federal and Special Systems Group, to manage the Air Force's Phase IV program, which will reportedly provide the Air Force with multiple computer systems at air bases throughout the world.

Direct, Inc. and Boles & Co. have signed an agreement awarding Boles & Co. exclusive marketing rights of the Direct VP 800 line of video processors.

Bull Corp. of America, the U.S. subsidiary of CII Honeywell Bull, has opened an office in California that will house both Western regional sales offices and the North America repair and spare parts center.

Richard C. Smith Jr., president of ISA Communications Services, Inc., has announced FCC authorization for his firm to operate as a common carrier. It will become an initial subscriber of service from Satellite Business Systems of McLean, Va.

Digital Equipment Corp. has awarded a $500 grant to the Data Processing Management Assoc. Education Foundation in a motion to endorse the foundation's efforts in improving educational opportunities for computer professionals.

Collier-Jackson & Assoc., Inc. of Tampa, Fla., recently changed its name to Collier-Jackson, Inc., and opened a western regional branch in Englewood, Colo. The firm develops newspaper industry software.

Mergers/Acquisitions

Tymshare, Inc., parent company of the western-based bankcard processor called Tymshare Transaction Services, has acquired the Bankcard Association of Rhode Island in a move to establish a national bankcard service capacity. Terms of the acquisition were not disclosed.

A.C. Nielsen Co., international market research firm, recently acquired Compucom, Inc., a Dallas company specializing in engineering services for the telecommunications industry.

Computer Task Group (CTG), a computer services firm, recently merged with Neoterics, Inc., a professional services company. Neoterics principals will become part of CTG's management and CTG shareholders.

Cummins-Allison Corp. has agreed to sell the operating assets of its Data Systems Division to Recognition Equipment, Inc., for approximately $6 million.

Security Pacific National Bank has recently acquired a substantial amount of the assets of Phoenix Data Corp., a system software development firm with headquarters in San Diego.

Computer & Communications Technology Corp. and Yang Electromagnetic Systems, Inc. have completed their previously announced merger.

Scientific Atlanta, Inc., has completed acquisition of Systems Communications Cable, Inc.

New Companies

Infoscribe, Inc., a company engaged in designing, manufacturing and marketing advanced printers for the computer industry, has been established recently. It is headquartered in Suite 524, California Federal Bldg., Anaheim, Calif. 92801.

Sigma Microsystems, Inc. has been established to provide technical services to Hayden Publishing Co.'s recently acquired Programma International. It is located at 415 W. Palmer Ave., Glendale, Calif. 91204.

M.W.L., Inc. has been formed to provide training and consulting to companies that sell information processing products or services and to aid information processing departments in larger firms in achieving tighter management controls. M.W.L. is located at Suite 254, 3655 Thousand Oaks Blvd., Westlake Village, Calif. 91361.

Executive Corner

- Ross Belson and Paul Derby have been named vice-presidents within Honeywell, Inc.'s Small Systems and Terminals Division, and Philip Stoughton and Ed Vance have been appointed vice-presidents in that company's Large Information Systems Division.
- Jess Barber has been appointed vice-president of corporate systems and services at Modular Computer Systems, Inc.
- John Waterman has joined Franklin Electric, Inc.'s programmed power division as vice-president of marketing.
- John N. Zimmerman has been named vice-president and assistant general counsel at Control Data Corp.
- Dr. Jared A. Anderson, president and chief executive officer of the Two Pi Corp., will leave his post at the end of this year.
- William Tollenger Jr. has joined Hastech, Inc. as director of systems engineering, and Jerome J. Strokus has joined that company as sales representative.

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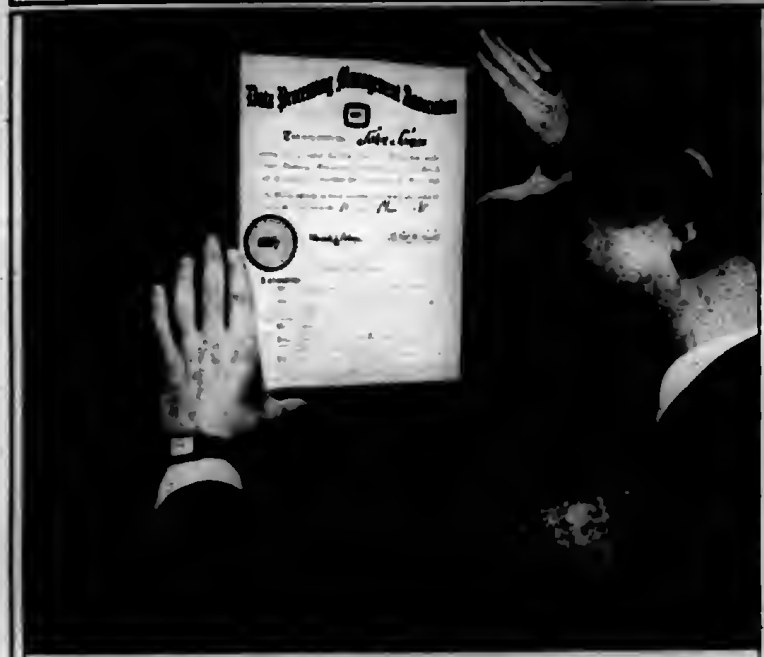

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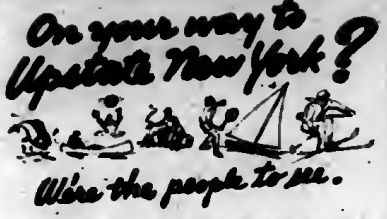

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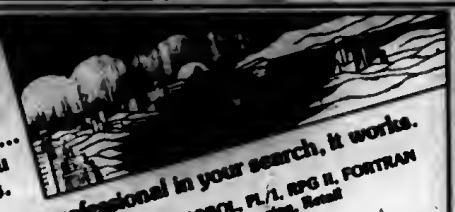

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The Denver Water Department has an immediate vacancy involving total responsibility for data processing functions including data base management, systems, operations and applications programming. The section staff numbers approximately 40 people.

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SOURCE-COMPUTER. IBM-MVS.
WORKING STORAGE SECTION.
77   HAVE-IMS PICTURE XXX.
     88   YOU-HAVE-IMS VALUE 'YES'.
77   HAVE-CICS PICTURE XXX
     88   YOU-HAVE-CICS VALUE 'YES'.
77   DOS-HELPFUL PICTURE XXX.
     88   YOU-HAVE-DOS VALUE 'YES'.
77   DP-MANAGEMENT PICTURE XXX.
     88   IM-MANAGER VALUE 'YES'.
77   PROGRAMMERS PICTURE XXX.
     88   IM-PROGRAMMER VALUE 'YES'.
77   OPERATORS PICTURE XXX.
     88   IM-OPERATOR VALUE 'YES'.
77   COUNTER PICTURE 9 VALUE ZERO.
PROCEDURE DIVISION.
     IF IM-MANAGER OR IM-PROGRAMMER OR
        IM-OPERATOR
        NEXT SENTENCE ELSE GO TO EOJ.
     IF YOU-HAVE-IMS ADD 1 TO COUNTER.
     IF YOU-HAVE-CICS ADD 1 TO COUNTER.
     IF YOU-HAVE-DOS ADD 1 TO COUNTER.
     IF COUNTER IS LESS THAN 1
        GO TO EOJ.
COMPANY-PAID-BENEFITS.
     DISPLAY 'MEDICAL INSURANCE'.
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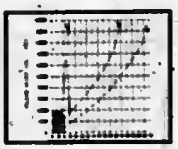

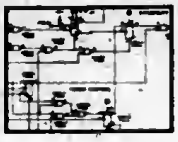

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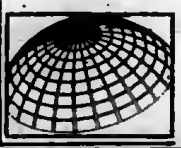

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COBOL and/or ASSEMBLER language is necessary. 2-4 years previous experience in batch and/or On-Line applications. Banking applications background is preferred.

SYSTEMS PROGRAMMERS

Background required in OS/VS 2, (MVS), JES 2/NJE internals, working knowledge of SMP 4, TSO and ROSCOE beneficial. Heavy exposure to troubleshooting and operations systems. Degree in computer science, math or statistics is desirable.

We offer an excellent salary, extensive benefits program including medical/dental insurance, continued training on state-of-the-art equipment, and an opportunity to share in our success and advance with us as we continue to grow.

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To be responsible for computer programming in application areas of inventories, payrolls, financial, order entry, communications, etc. Working knowledge of Cobol a must. Some Fortran, CICS, DMS, VM-CMS, DOS/VSE preferred. IBM 3031 hardware system. Experience on IBM 370/135 (or above) highly desirable.

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Major responsibility will be in our management information data collection center in high production areas, and in the monitoring and controlling of utilities, energy, etc., utilizing minicomputers. Working knowledge of DEC PDP 11/34 or 11/44 using RSX-11M a must. A good understanding of fundamentals and familiarity with MACRO-11, Basic +2 and RMS-11K is desirable.

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Computer

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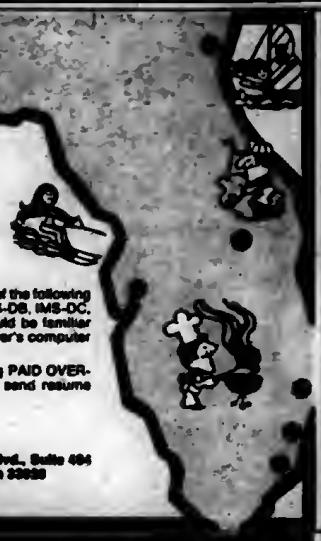

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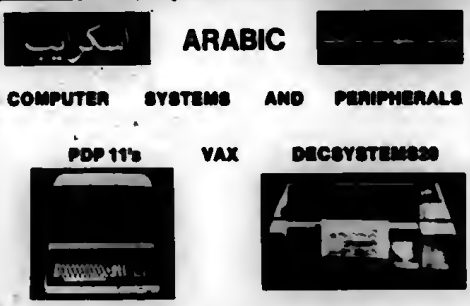

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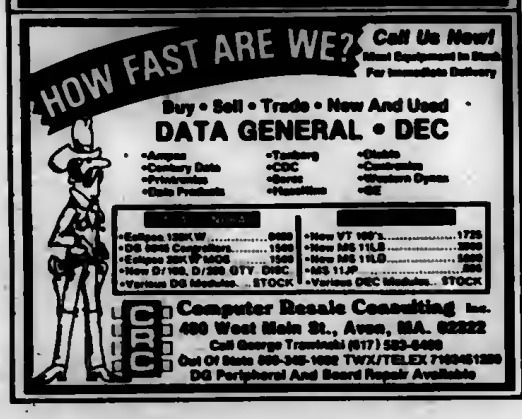

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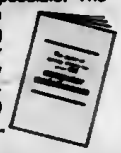

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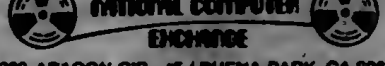

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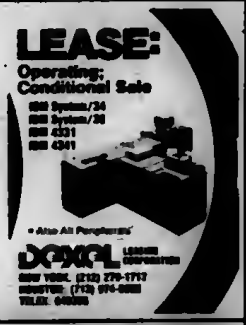

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Request for Proposal No. 706 due 3:30 P.M., Wednesday, December 17, 1980 for the acquisition of graphics terminals, plotters and related peripherals. This is a general RFP to be used to select graphics equipment for the state of Mississippi through 1981.

Request for Proposal No. 707 due 3:30 P.M., Wednesday, December 17, 1980 for the acquisition of insurance coverage on state-owned computer equipment.

Request for Proposal No. 708 due 3:30 P.M., Wednesday, December 17, 1980 for the acquisition of a small-scale multiprogramming computer system for instructional and administrative applications at a junior college.

Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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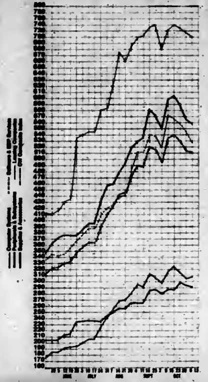

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Computerworld Stock Trading Summary

CLOSING PRICES MONDAY, NOVEMBER 3, 1980

All statistics compiled, computed and formatted by TRADE QUOTES, INC. Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		1979-80 RANGE (1)	CLOSE NOV 3 1980	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMDAHL CORP	19- 42	28 3/4	+ 3/8	+1.3
N	BURROUGHS CORP	52- 88	52 3/8	+ 1/2	+0.5
O	COMPUTER AUTOMATION	9- 21	22 3/4	- 1/4	-1.0
N	CONTROL DATA CORP	35- 81	70 1/2	+2 3/4	+4.1
O	CRAY RESEARCH INC	26- 99	60 1/4	+2 1/2	+2.5
N	DATA GENERAL CORP	46- 87	82 1/8	- 5/8	-0.4
N	DATAPOINT CORP	44- 91	80 1/8	+3	+3.5
N	DIGITAL EQUIPMENT	52- 98	88 3/4	+3	+3.4
A	FOCS INC	9- 21	21 3/8	+ 3/8	+1.7
N	ELECTRONIC ASSOC.	6- 12	9	- 3/4	-7.8
N	FOUR-PHASE SYSTEMS	20- 40	27 3/8	- 1/8	-0.4
N	FOXBORO	31- 57	54 3/2	- 1/8	-0.2
A	GENERAL AUTOMATION	7- 19	8	- 1/8	-5.2
O	GRI COMPUTER CORP	7- 7	1 1/8	0	0.0
N	HEWLETT-PACKARD CO	40- 82	78 3/4	+ 7/8	+1.1
N	HONEYWELL INC	65-101	90 7/8	+2 1/8	+3.3
N	IBM	50- 79	67 1/2	+3	+3.4
O	MAGNUSON COMP SYSTS	20- 37	30 1/2	- 3/4	-2.0
N	MANAGEMENT ASSIST	9- 25	23	+ 1/8	+0.5
O	MANUFACTURING DATA S	22- 69	66	+1	+1.5
O	MINI-COMPUTER SYST	3- 8	2 3/4	- 1/4	-8.3
O	MODULAR COMPUTER SYS	8- 31	27	+ 7/8	+3.3
N	NCR	52- 82	67 5/8	+ 1/8	+0.1
N	PRIME COMPUTER INC	15- 44	45	+3 1/2	+8.0
N	QANTEL?	20- 40	33 3/4	+ 1/4	+1.7
N	SPERRY RAND	42- 60	44 3/8	- 5/8	-1.2
N	SYSTEMS ENG. LABS	11- 45	41 3/8	+1 1/4	+3.6
O	TANDEM COMPUTERS INC	19- 80	80 1/4	+1 1/2	+2.5
N	TEXAS INSTRUMENTS	75-144	126 3/8	+ 3/8	+0.0
A	WANG LABS.	17- 60	27 3/8	-30	-52.2

LEADING COMPANIES

EXCH		1979-80 RANGE (1)	CLOSE NOV 3 1980	WEEK NET CHNGE	WEEK PCT CHNGE
O	BOOTHE FINANCIAL CP	13- 27	22	-1 1/4	-5.6
N	COMDISCO INC	9- 18	18 1/2	+ 1/2	+3.1
N	COMPLEX GROUP CORP	3- 3	3	0	0.0
N	COMPUTER INVESTORS GRP	2- 6	2	+ 1/8	+6.6
O	CONTINENTAL INFO SYS	3- 15	3	0	0.0
N	DATRONIC RENTAL	3- 5	8 1/4	+ 3/8	+3.0
N	DCL INC	3- 6	3 1/8	- 1/8	-3.6
N	DPF INC	9- 13	7 1/8	+ 1/8	+1.7
N	ITEL	1- 13	1 3/8	- 1/8	-8.3
O	LEASPAC CORP	1- 2	3/4	- 1/4	-25.0
N	PIONEER TEX CORP	2- 4	3 3/8	0	0.0
N	RELIANCE GROUP INC	24- 70	67 1/8	- 3/4	-1.0
N	U.S. LEASING	18- 24	32 1/4	- 1/4	-1.1

EXCH: N=NEW YORK; A=AMERICAN; B=BOSTON; M=MIDWEST; P=PACIFIC; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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SOFTWARE & EDP SERVICES

EXCH		1979-80 RANGE (1)	CLOSE NOV 3 1980	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	3- 6	4 3/8	+ 1/8	+2.7
O	ANACOMP INC	7- 21	18 7/8	- 5/8	-3.2
O	ANALYSIS INTL CORP	3- 18	5 1/4	0	0.0
A	APPLIED DATA RES.	8- 24	22 1/8	+1 1/8	+4.3
N	AUTOMATIC DATA PROC	31- 52	47 3/4	+ 3/8	+0.1
O	COMPUTER HORIZONS	3- 9	3 1/2	- 1/4	-6.3
O	COMPUTER NETWORK	4- 9	3 3/4	+ 1/4	+3.5
N	COMPUTER SCIENCES	11- 30	15 3/4	0	0.0
O	COMPUTER TASK GROUP	7- 22	18 1/2	+1	+5.1
O	COMPUTER USAGE	3- 16	3	+ 1/4	+3.3
O	COMPUT AUTO REP SVC	4- 10	6 1/8	0	0.0
O	COMSHARE	11- 31	17 1/4	- 1/4	-1.4
O	CULLINANE CORP	14- 65	50 1/4	+2 3/4	+4.9
O	DATA DIMENSIONS INC	3- 8	1 1/2	- 1/8	-10.0
O	DATATAB	3- 4	1 1/8	- 1/8	-10.6
O	DSI CORP	4- 9	1 3/8	+ 1/8	+1.0
N	ELECTRONIC DATA SYST	19- 37	31 1/4	- 3/8	-1.1
O	INFORMATICS INC	9- 25	14 1/2	- 3/8	-1.6
O	INSTID CORP	1- 3	1 7/8	0	0.0
O	IPS COMPUTER MARKET.	3- 4	3 1/2	0	0.0
O	KEANE ASSOCIATES	3- 9	6	- 1/8	-0.0
O	KEODATA CORP	1- 3	3/4	-1 1/8	-60.0
N	LOGICON	12- 20	37 1/8	+1 1/4	+4.0
O	MATHEMATICA INC	9- 16	12 1/2	-1 3/4	-12.2
O	MATHEMATICAL APP GRP	1- 33	25 1/2	-2	-7.2
O	NATIONAL DATA CORP	10- 29	20 3/4	+1 1/8	+8.3
N	PLANNING RESEARCH	5- 13	13	- 3/8	-5.3
O	PROGRAMMING & SYS	1- 1	3/4	0	0.0
O	RAPIDATA INC	4- 9	7 1/2	- 3/8	-4.7
O	REYNOLDS & REYNOLDS	21- 34	21 3/4	+ 1/4	+1.1
O	SASC INC	8- 19	10 3/4	+ 1/2	+2.7
O	SCIENTIFIC COMPUTERS	4- 21	24 1/4	- 3/4	-3.0
N	TYMSHARE INC	34- 79	13 3/4	+ 3/4	+7.0
N	URI SYSTEMS	5- 15	14 1/2	- 1/8	-6.0
N	WYLY CORP	4- 20	10 1/2	+ 3/8	+2.0

PERIPHERALS & SUBSYSTEMS

EXCH		1979-80 RANGE (1)	CLOSE NOV 3 1980	WEEK NET CHNGE	WEEK PCT CHNGE
N	AM INTERNATIONAL	18- 20	10 1/8	+ 1/4	+1.5
N	AMPEX CORP	34- 36	20 3/4	+ 1/8	+0.0
A	ANDERSON JACOBSON	9- 10	11 3/8	+1 3/8	+0.5
N	APPLIED DIG DATA SYS	9- 14	11 7/8	- 1/8	-1.0
O	AUTO-TROL TECHNOLOGY	19- 62	40 1/2	+3 1/8	+3.0
O	BEEHIVE INTL	3- 18	10 1/8	- 5/8	-3.1
N	BURROUGHS?	12- 35	28	-3 3/8	-1.0
N	[illegible]	17- 41	35 1/8	+2 5/8	+7.1
O	CAMBRIDGE MEMORIES	1- 9	3 7/8	+ 1/8	+3.3
N	CENTRONICS DATA CORP	20- 95	30	+ 1/8	+0.4
N	CPTEC CORP	3- 7	6 5/8	- 1/8	-7.0
O	COMPUTER DEVICES INC	9- 10	7 3/4	- 1/8	-1.5
O	COMPUTER?	7- 8	1 7/8	- 1/8	-1.4
O	COMPUTER COMMUN.	4- 10	3 5/8	-1	-25.0
O	COMPUTER CONSOLES	6- 29	31	+ 3/4	+1.2
O	COMPUTER TRANSCEIVER	1- 5	3 7/8	0	0.0
N	COMPUTERVISION CORP	24- 62	13	+4 3/4	+14.3
N	CONRAC CORP	13- 25	17 3/8	+ 3/8	+2.9
O	DATA ACCESS SYSTEMS	6- 17	33 1/2	+ 3/8	+0.0
A	DATA PRODUCTS CORP	11- 35	30 1/4	+1 3/4	+6.1
O	DATUM INC	2- 5	4 3/4	+ 1/8	+2.7
O	DECISION DATA COMPUT	2- 8	4 3/4	+ 1/8	+3.3
O	DELTA DATA SYSTEMS	1- 3	2	- 1/8	-9.0
A	DISCOPTICA INC	1- 27	18 5/4	+ 3/8	+2.3
O	DATAMAP CORP	6- 37	16 1/8	+ 1/4	+2.5
N	ELECTRONIC M & M	3- 8	7 5/8	+ 3/8	+3.1
O	EVANS & SUTHERLAND	21- 72	69 1/2	- 1/2	-0.1
O	FABRI-TEK	3- 4	3 1/8	+ 1/8	+4.1
O	GENERAL COMPUTER SYS	1- 4	3 3/4	+1	+21.0
O	GENERAL DATACOMM IND	12- 36	28 1/4	0	0.0
O	GENERAL TERMINAL CP	1- 4	3 1/4	+ 1/2	+10.0
N	HAZELTINE CORP	12- 33	36 1/4	+3	+11.1
N	HARRIS CORP	25- 52	51 3/4	+ 1/4	+0.4
O	INFORMATION INTL INC	4- 13	12 1/2	- 1/4	-1.6
O	INTEL CORP	38- 90	62	+3 3/4	-0.1
O	INTERSIL	11- 33	33 1/8	0	0.0
N	LUNDY ELECTRONICS	4- 17	13 5/8	-1	-6.8
O	MAI DATA CORP	5- 10	13	0	0.0
N	MEMOREX	10- 36	14 7/8	- 5/8	-4.0
N	MOHAWK DATA SCI	10- 31	23 3/4	-8 3/8	-32.4
O	MSI	3- 12	12	- 1/2	-4.0
N	NASHUA CORP	30- 55	54 3/4	+3 1/2	+6.0
N	PERTEC CORP	9- 19	12 1/8	- 6/8	-5.0
O	RAMTEK CORP	10- 16	17	0	0.0
O	RECOGNITION EQUIP	9- 21	11 5/8	- 3/8	-2.6
O	SCAN DATA	1- 5	4	- 1/8	-5.1
N	STORAGE TECHNOLOGY	12- 24	22 3/4	+ 1/8	+0.5
O	SYKES DATATRONICS	10- 41	48 1/2	+ 1/2	+1.0
O	T-BAR INC	14- 22	26 1/2	+ 1/4	+1.0
N	TEC INC	3- 9	3 1/8	+ 1/4	+8.0
N	TEKTRONIX INC	42- 70	73 1/2	- 3/8	-0.5
A	TELEX	3- 8	3 3/4	+ 1/8	-4.1
O	TESDATA SYSTEMS CP	9- 26	14 1/8	+ 5/8	-4.0
N	TIMEPLEX INC	7- 29	26 5/8	+3 3/8	+3.2
O	WILTEK INC	1- 3	1 1/8	0	0.0

SUPPLIES & ACCESSORIES

EXCH		1979-80 RANGE (1)	CLOSE NOV 3 1980	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN BUS PRODS	6- 15	12 1/2	- 3/4	-5.0
O	BALTIMORE BUS FORMS	3- 7	1	0	0.0
N	BARRY WRIGHT	8- 28	28 1/4	+ 3/8	+0.0
O	CYBERNETICS INC	1- 2	1 3/8	- 1/8	-15.3
N	DUPLEX PRODUCTS INC	11- 10	15 3/8	+ 1/4	+1.0
A	ENNIS BUS. FORMS	13- 21	16 1/4	- 1/2	-8.3
N	3M COMPANY	48- 61	57 3/8	+ 7/8	+1.5
O	MOORE CORP LTD	29- 37	32 3/4	- 1/4	-0.7
N	NASHUA CORP	26- 55	46	+ 3/8	+0.4
O	STANDARD REGISTER	24- 35	31 3/4	0	0.0
A	TAB PRODUCTS CO	9- 20	23 7/8	0	0.0
N	VARIAN GRAPHICS	11- 20	15 3/4	+1 3/8	+0.6
N	WALLACE BUS FORMS	23- 50	49 1/8	+3 3/8	+2.6

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